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ENTOMOLOGY
Vol. XXVIII

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THE GENUS *ETIELLA* ZELLER (LEPIDOPTERA : PYRALIDAE) : A ZOOGEOGRAPHIC AND TAXONOMIC STUDY

P. E. S. WHALLEY

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BRITISH MUSEUM
4 JUL 1973
NATURAL HISTORY

BY

PAUL ERNEST SUTTON WHALLEY [illegible]

Pp. 1–21; 15 *Plates*, 1 *Text-figure*, 7 *Maps*

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By P. E. S. WHALLEY

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SYNOPSIS

The genus *Etiella* Zeller (Lepidoptera, Pyralidae) is redefined and the species in it listed and discussed. Keys to these species, together with maps of their distribution, are given. Four specific synonyms are newly established. The possible phylogeny of the genus is discussed and references to the literature on the biology and control of the Lima-bean Pod-borer, *Etiella zinckenella* (Treitschke) are given.

INTRODUCTION

THE genus *Etiella* Zeller (Pyralidae, Phycitinae) contains species whose larvae, where known, feed on the seeds of Leguminous plants. The cosmopolitan species, *Etiella zinckenella* (Treitschke), popularly known as the Lima-bean Pod-borer, is a serious pest of legumes in many parts of the world. Although the present work is primarily a zoogeographic and taxonomic study of the genus, references to the biology and insecticide control of recent years are also given.

The definition of the genus on page 9 restricts the number of species to seven; no new species is described here and nine species are transferred to other genera. One of the more difficult problems has been the generic placing of the species removed from the genus. In spite of considerable effort, the placing of these species in this work must be regarded as provisional. They may be more accurately placed when other genera of Phycitinae are revised.

The problems of the Phycitinae and their identification were summarized by Heinrich (1956 : vi), who wrote 'So many misidentifications have been made in the past, even by Lepidopterists of repute, that records in the literature cannot be accepted merely on the authority of the author'. This is as true in *Etiella* as in the other genera in the subfamily and therefore no previously published records of the genus have been accepted unless they were accompanied by clearly recognizable figures. Although we can be reasonably certain that only *E. zinckenella* has been found on some continents, each record there still requires critical examination.

Most of the type-specimens of the species described in *Etiella* have been examined; in cases where these were not available topotypic material was used. The type-specimens of all the presently valid species in the genus have been examined. Wing measurements given are taken from the apex of the fore wing to the centre of the mesothorax. Wing span is thus approximately twice this figure.

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I am indebted to my colleagues for their comments and advice and to Mr M. Shaffer for technical assistance. The photographs were mostly taken by the Photographic Section, BMNH, the two stereoscans were taken by the Electron Microscope Unit, BMNH, and a few, as indicated, by the author.

ABBREVIATIONS

AMNH	American Museum of Natural History, New York.
ANIC	Australian National Insect Collection, C.S.I.R.O., Canberra.
BMNH	British Museum (Natural History).
BPBM	Bernice P. Bishop Museum, Honolulu.
MNHN	Muséum National d'Histoire Naturelle, Paris.
SAM	South Australian Museum, Adelaide.
TM	Természettudományi Múzeum, Budapest.

CHECK-LIST OF SPECIES OF *ETIELLA* ZELLER

E. scitivittalis (Walker) **sp. rev.**
    sincerella Meyrick **syn. n.**
E. chrysoporella Meyrick
E. grisea grisea Hampson
E. grisea drososcia Meyrick **stat. n.**
E. hobsoni (Butler)
    melanella Hampson **syn. n.**

E. walsinghamella Ragonot
flavofasciella Inoue **syn. n.**
E. zinckenella (Treitschke)
anticalis Walker
**colonnellus* Costa
dymnusalis Walker
**zinckenella* ab. *decipiens* Staudinger
etiella Treitschke
hastiferella Walker
heraldella Guenée
indicatalis Walker
**madagascariensis* Saalmüller
**majorellus* Costa
**rubribasella* Hulst
sabulinus Butler
schisticolor Zeller
**spartiella* Rondani
**villosella* Hulst
E. behrii (Zeller)
subaurella Walker
consociella Walker
ochristrigella Ragonot **syn. n.**

SPECIES TRANSFERRED FROM *ETIELLA* ZELLER

The following species, originally described in *Etiella*, have been transferred to the genera indicated. All their holotypes have been examined.

Assara albicostalis (Walker), transferred by Roesler, 1965, Inaugural Dissertation der Universität des Saarlandes, Saarbrücken.
Nephopterix furella (Strand) **comb. n.**
Nephopterix fuscalis (Kenrich) **comb. n.**
Hypogryphia holozona (Lower) **comb. n.** Very close to *H. rufifasciella* Hampson.
Staudingeria ifraneella (Lucas) **comb. n.** The holotype is a female and the generic position of this species is uncertain.
Cryptoblabes myosticta (Hampson) **comb. n.**
Catastia uniformalis (Hampson) **comb. n.**
Phycita venustella (Hampson) **comb. n.**
Epischnia yangtseella (Caradja) **comb. n.**

GEOGRAPHICAL DISTRIBUTION

Maps 1–7 show the distribution of each species. Except for *E. zinckenella* the species of the genus are restricted to the Australasian and part of the Oriental regions, with one of these species occurring in Japan.

---

*Holotype or paratype not examined, topotypic material studied.

A small collection from Monte Bello Is. (West Australia), made in 1952, contained a short series of *Etiella* specimens. These have proved to include three species (*behrii, chrysoporella, grisea*). While the former two are widespread Australian species, the latter is otherwise known only from one specimen on the mainland at Wyndham (Western Australia).

E. scitivittalis is restricted to Australia while *E. chrysoporella* is known only from Australia and the island of Tanimber in the Arafura Sea. *E. grisea* is widespread over the Pacific and, while not yet recorded from Java and Sumatra, occurs in Ceylon. Although the genitalia of all the specimens of *grisea* examined were similar, there is some local variation in pattern and colour. In Ceylon the specimens are pale grey while on Tanimber, the only two specimens examined are much blacker than the other specimens. In spite of wide separation of the populations of this species from the Society Islands to the Marianas, no constant differences in morphology have been found between most of these island populations.

E. hobsoni is widely distributed with, at present, few records from New Guinea and none from Celebes. Specimens from Formosa differ only slightly in pattern from the Australian specimens and, on the few specimens examined, cannot be separated subspecifically.

E. walsinghamella has a similar distribution to *hobsoni* but is less widely distributed in Australia, while extending through the East Indies right up to Japan. Differentiation is again slight over the whole range with some pattern differences but, on the material examined, this is not constant. *E. walsinghamella* is very distinct in external colour and pattern from *E. zinckenella* but the rest of the morphology and genitalia in both sexes are similar in these two species. It seems probable that *walsinghamella* and *zinckenella* are derived only recently from a common ancestor, from which they have only slightly differentiated.

E. zinckenella is pantropical, but in the present work specimens have not been seen from New Zealand or Hawaii, nor from many of the central Pacific Islands. *E. zinckenella* is widespread in Nearctic, Neotropical, Ethiopian, Oriental and southern Palaearctic regions and in the northern part of Australia and some Pacific Islands, including Samoa. In spite of being widespread, with much variation in size and colour over the whole range, there is no evidence of local populations differentiating on morphological grounds and it seems likely that its spread has been both rapid and relatively recent and probably assisted by man. Another factor with this species is its own inherent ability for widespread dispersion. Stone (1965 : 16) comments that 'the moths are strong fliers and capable of migrating long distances to reach their host-plant.' Certainly this is amongst the most widespread of any species of moth which has not apparently subspeciated over any part of its range.

E. behrii has been recorded in the literature (e.g., Vesey-Fitzgerald, 1941) from outside the range shown in map 7. Most of these specimens have been re-examined and all have proved to be *zinckenella*. At present the range of *behrii* is more restricted than *zinckenella* although it may well prove to have a similar explosive spread-potential and to become more widespread.

PHYLOGENY

No fossil evidence is available for consideration of the evolution of this genus and only biological and morphological evidence is used in the following discussion.

The genus consists of two groups of species with different types of distribution

1. World-wide (one species).
2. Mainly Australasian or Oriental (six species).

If the genus is monophyletic there are two ways of considering its phylogeny.

a. The species in the first group, having spread widely from 'a centre of origin', speciated in the Oriental-Australasian region. This is analagous to a widespread species arriving on, for example Hawaii, and then radiating and eventually producing many new species. Cases of this type of peripheral or island speciation are well documented (e.g. Zimmerman, 1970).

b. Conversely, the widespread species arose from a species in the Oriental-Australasian region which then spread rapidly round the tropics.

From morphological studies, the world-wide species (*zinckenella*) shows more specialized features than some of the species of more restricted distribution. The extreme modification of the costa of the valve in the male and the enormous secondary sac on the bursa of the female can be considered the end points arising from species where these characters are present in a less developed condition. For the alternative argument, that the 'simpler' ones arose by reduction of the characters of the wide-spread species, no supporting evidence has been found in any related genus, which seems otherwise morphologically closer to *Etiella*, where these specializations do not occur. In one species (*scitivittalis*) the characters of the genus are present in the least developed form and this species is known at present only from Australia. From this species a series showing gradual development of these characters can be drawn from the species in the genus.

If the genus arose by rapid speciation in the Australasian region of the more widespread species by gradual reduction of the various characters, one must assume that a reduced state is more specialized. As already mentioned, no supporting evidence for this has been found in other genera. For example, the long costal process on the valve of the male is unusual and the evidence suggests that the less specialized condition of the valve is the more general (? primitive) form.

In the absence of other evidence, I consider that the genus is Australasian in origin and that one species has been particularly successful, showing explosive spreading throughout the world between 50° north and 50° south.

The genus *Etiella* is allied to *Pima* Hulst, whose larvae also feed on leguminous seeds, but its actual relationship to this and other Phycitid genera will have to wait for further studies on them. Within the genus *Etiella* a possible phyletic relation can be represented by the morphoseries shown in Text-fig. 1.

BIOLOGY

E. zinckenella is a pest of pods of legumes. It has been recorded from 30 species in 21 genera of legumes (Naito, 1961) but few records have been published of hosts other than legumes (e.g., Viktorov, 1938, on water melons). Many accounts of the biology and life-history of this species have been published and a selection of them is given in the references. Data on the other species in the genus is more limited but all the recorded hosts are species of legumes. The species in the genus appear to have specialised in feeding on the seeds of these plants. For further information on the biology and control measures of *E. zinckenella*, see Issiki, 1969, (coloured figures of the larvae); Kruel, 1963 (occurrence in Germany); Naito, 1961 (biology and distribution); Oatman, 1967 (biology in the U.S.A.); Peiu, 1966 (biology in Roumania); Schad, 1943 (biology in France); Stone, 1965 (biology and control measures in the U.S.A.).

Details of host plants are given in the section 'Biology' under each species.

ETIELLA Zeller, 1839

Etiella Zeller, 1839 : 733. Type-species: *Phycis zinckenella* Treitschke, by monotypy.
Rhamphodes Guenée, 1845 : 319. Type-species: *Phycis etiella* Treitschke, by monotypy.
Mella Walker, 1859 : 1017. Type-species: *Mella dymnusalis* Walker, by monotypy.
Alata Walker, 1863 : 108. Type-species: *Alata anticella* Walker, by monotypy.
Arucha Walker, 1863 : 201. Type-species: *Arucha indicatalis* Walker, by monotypy.
Modiana Walker, 1863 : 82. Type-species: *Modiana scitivittalis* Walker, by monotypy.
Ceratamma Butler, 1880 : 689. Type-species: *Ceratamma hobsoni* Butler, by original designation.

The synonymy given in the Catalogue of the genera of Phycitinae (Whalley, 1970 : 45) has been checked. Although the synonymy remains the same, the genus, which has often been attributed to Zeller, 1846, is here referred to his usage of 1839; (in this work Zeller refers to it as a subgenus of *Pempelia* Hübner, 1825), this is the date used by Heinrich, 1956.

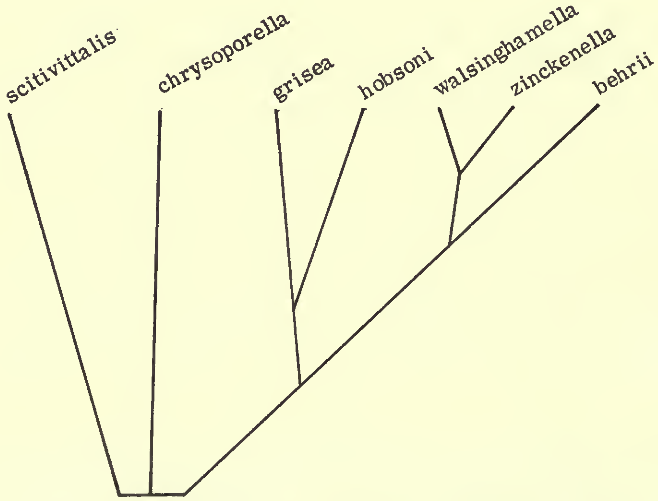

FIG. 1. Suggested relationship of species in *Etiella* Zeller. (See p. 7)

Antennae of male with basal segment enlarged with variable shaped projection on inner margin near base. Shaft with sinus containing long scales. Labial palps very long, usually 2 or more times diameter of eye. Second segment of labial palps grooved to hold aigrette-like maxillary palps. Maxilliary palps of female smaller; third segment of labial palp longer than in male. Fore wing often with ridge of raised scales in antemedian position. Eleven fore wing veins. Hind wing with M_2 and M_3 joined. Eighth segment of male with small hair-tufts Uncus hood-like. Gnathus a simple sharp hook. Valve usually with strongly sclerotized costal process. Aedeagus with strongly sclerotized and spiny vesica with cornuti. Female with bursa elongate, usually with many-spined signum, secondary sac (see Pl. 10, figs 66, 68 and 76, indicated by 's') usually sclerotized, coming off bursa near junction of ductus bursae. Ductus seminalis arising from various positions on bursa, often from near origin of secondary sac.

KEY TO MALES

1		Juxta with elongate, pointed and sclerotized arms (Pl. 5, figs 26 and 30)	2
–		Juxta blunt-ended, usually with apical hairs on each lobe	3
2	(1)	One costal valve process long, sclerotized, other costal process reduced but visible as sclerotized point. (Pl. 5, fig. 30)	***chrysoporella*** (p. 11)
–		Both valves with very reduced processes, visible only as small, lightly sclerotized processes (Pl. 5, fig. 25)	***scitivittalis*** (p. 10)
3	(1)	Both costal valve processes long, sometimes one slightly shorter than other	4
–		One valve process very reduced, less than half length of other (Pl. 6, fig. 36)	***grisea*** (p. 11)
4	(3)	Juxta lobes long and slender (Pl. 8, fig. 55). Valve approximately diamond-shaped (Pl. 8, fig. 57)	***behrii*** (p. 17)
–		Juxta lobes not as above, often swollen at apex, valve often elongate and thin	5
5	(4)	Fore wings reddish brown, without white costal streak. Broad yellow-orange median fascia. Hind wings black or dark grey. Genitalia as in Pl. 7, figs 44–49	***walsinghamella*** (p. 14)
–		Fore wings with or without white costal streak. If without streak, fore wings black or dark brown; if with streak, fore wings varying from pale buff to almost black. Antemedian fascia narrow	6
6	(5)	White costal streak. Grey-brown, buff or nearly black fore wings. Very variable in size. Genitalia as in Pl. 8, fig. 50	***zinckenella*** (p. 15)
–		White costal streak very indistinct or absent. General colour of fore wings black or dark reddish brown. Hind wings dark. Genitalia as in Pl. 7, fig. 40	***hobsoni*** (p. 13)

KEY TO FEMALES

1		No sclerotized secondary sac on bursa nor sac attached to bursa by duct (Pl. 10, fig. 65)	***scitivittalis*** (p. 10)
–		Secondary sac on bursa or attached by long duct. Secondary sac usually heavily sclerotized	2
2	(1)	Duct of bursa short (Pl. 10, figs 66, 76) usually wider than long	3
–		Duct of bursa much longer than width	4
3	(2)	Ductus seminalis from near middle of bursa. Small sclerotized platelets in broader first part of ductus seminalis. Secondary sac a sclerotized lobe on bursa (Pl. 10, fig. 66)	***chrysoporella*** (p. 11)
–		Ductus seminalis opening nearer bottom of bursa away from ductus bursae. Spines in ductus seminalis. Secondary sac at end of long duct (Pl. 10, fig. 76)	***behrii*** (p. 17)
4	(2)	First part of ductus seminalis with small spines or sclerotized plates	5
–		First part of ductus seminalis without spines or sclerotized plates, duct often strongly folded	6

5 (4) Signum a row of long spines, clearly visible (Pl. 14, fig. 96) . . ***hobsoni*** (p. 13)
– Signum of smaller spines, or signum indistinct (Pl. 14, fig. 95) . ***grisea*** (p. 12)
6 (4) Ductus bursae heavily sclerotized with long striae. Ostium heavily sclerotized. Secondary sac clearly without sclerotized spines . ***walsinghamella*** (p. 14)
– Ductus bursae less heavily sclerotized. Ostium lightly sclerotized. Secondary sac clearly with sclerotized spines . . . . . ***zinckenella*** (p. 15)

TAXONOMIC SECTION

Etiella scitivittalis (Walker) **sp. rev.**

(Pl. 1, fig. 1; Pl. 5, figs 25–29; Pl. 10, fig. 65; Pl. 12, fig. 83; Pl. 14, fig. 93)

Modiana scitivittalis Walker, 1863 : 83. Holotype ♂, AUSTRALIA (BMNH) [examined].
Etiella sincerella Meyrick, 1879 : 204. Holotype ♂, AUSTRALIA (BMNH) [examined]. **Syn. n.**
Etiella sincerella Meyrick; Ragonot, 1893 : 571.
[*Etiella zinckenella* (Treitschke) sensu Ragonot, 1893 : 572, misidentification.]

♂. Wing, 14–16 mm. Labial palps 3 × diameter of eye. Third segment of labial palp less than ¼ length of second. Fore wing, pattern as in Pl. 1, fig. 1, reddish brown behind white costal streak. Orange-brown transverse antemedial fascia. Hind wings smoky grey.

Genitalia ♂ (Pl. 5, figs 25–29). Valves with costal margin thickened, process on costa a single short lobe on each valve. Juxta with two sclerotized lateral lobes, curved and pointed. Aedeagus with large cornuti.

♀. Wing, 11–15 mm. Third segment of labial palp longer than in male. Pattern and colour similar.

Genitalia ♀ (Pl. 10, fig. 65; Pl. 12, fig. 83; Pl. 14, fig. 93). Signum a row of long spines. No sclerotized secondary sac on bursa. Ductus seminalis with minute platelets, broad, arising from near middle of bursa.

DISCUSSION. This is the largest species in the genus and is easily recognized by the size and warm reddish brown colour of the fore wings behind the white costal streak. The costal margin of the valve in the male is heavily sclerotized but with only a small process from the margin. The valve also has a small raised papilla half way along the length just below the costa, this papilla is covered with stout spines. An homologous area in the other species also has the stout spines but is without the raised papillae. The juxta is similar to *chrysoporella* and the aedeagus is typical of the genus. The female differs from all the others in the genus in the lack of the secondary sac on the bursa. From the position where the ductus bursae enters the bursa there is a trace of the first stages of a secondary sac.

BIOLOGY. No information.

DISTRIBUTION. Map 1. Australia, Queensland, New South Wales.

MATERIAL EXAMINED.

Holotype ♂ (*scitivittalis*), AUSTRALIA: Moreton Bay, BM slide no. 13056, in BMNH. Holotype ♂ (*sincerella*), AUSTRALIA: Sydney, N.S.W., G.H.R., ix.[18]78, BM slide no. 13254, in BMNH. 18 specimens, SAM, Adelaide. 5 specimens, BMNH. 8 specimens, ANIC, Canberra.

Etiella chrysoporella Meyrick

(Pl. 1, figs 2, 4; Pl. 5, figs 30, 31; Pl. 10, fig. 66; Pl. 11, fig. 77; Pl. 14, fig. 94)

Etiella chrysoporella Meyrick, 1879 : 206. LECTOTYPE ♂, AUSTRALIA (BMNH), here designated [examined].

Etiella chrysoporella Meyrick; Ragonot, 1893 : 576.

♂. Wing, 8–12 mm. Fore wing pattern as in Pl. 1, fig. 2, brown with golden iridescence. Spots on antemedial fascia edged with black. White streaks between veins subterminally. Usually a white streak from basal area below posterior margin of cell. Costal streak white. Hind wings pale smoky brown.

Genitalia ♂ (Pl. 5, figs 30, 31). Costal process of valve modified, one process shorter than other. Juxta with strongly sclerotized and pointed lateral arms. Aedeagus with cornuti similar to *zinckenella*.

♀. Wings, 8–12 mm. Colour and pattern as male. Third segment of labial palps longer than in male.

Genitalia ♀ (Pl. 10, fig. 66; Pl. 11, fig. 77; Pl. 14, fig. 94). Ductus bursae short, lightly sclerotized. Secondary sac on bursa large, heavily spined near junction with bursa. Bursa with row of long spines. Ductus seminalis, with small sclerotized platelets inside, arising from near middle of bursa.

DISCUSSION. Specimens from Tanimber do not differ from those from the mainland of Australia. The bright iridescent colours and particularly the more numerous white streaks on the fore wing separate this species from the others in the genus.

BIOLOGY. No information.

DISTRIBUTION. Map 2. Australia, Queensland, South Australia, Northern Territory, Western Australia; Indonesia, Tanimber.

MATERIAL EXAMINED.

Lectotype ♂, AUSTRALIA: Adelaide, S. Australia, 15.x.[18]82, Meyrick coll. BM slide no. 13208, in BMNH. 40 specimens, BMNH. 35 specimens, SAM, Adelaide. 8 specimens, ANIC, Canberra.

Etiella grisea Hampson

Etiella grisea Hampson, 1903 : 33.

This species varies from grey to a rather blackish brown colour on the fore wings. It is characterized in the male by the reduction of one of the costal valve processes to a short spine. In the female the spines of the signum, which are characteristic of the other species in the genus, are reduced or absent in *grisea*. The ductus seminalis in the male is broad and the first part of it from the bursa has small sclerotized platelets inside.

E. grisea is widely distributed from Ceylon to Tahiti. The Ceylon specimens are grey in colour whereas those over the rest of the range tend to be more grey-brown. On Tanimber the only two specimens examined have a much darker fore wing than any of the other specimens and could represent a distinct subspecies; the single specimen from Monte Bello Island (Western Australia) is also slightly different from the others. The series from Ceylon is constant in pattern and has already been named by Hampson, the remaining specimens are grouped with the species Meyrick described from Tahiti. In spite of wide separation of island populations no differences were found in the morphology of the genitalia, even the Ceylon specimens were similar.

KEY TO THE SUBSPECIES OF *E. grisea* Hampson

Pale grey fore wing, sometimes with transverse fascia. Ceylon . ***grisea grisea*** (p. 12)
Grey or grey-brown fore wing, sometimes with transverse fascia, occasionally with traces of white costal streak. Australian-Pacific . . . . ***grisea drososcia*** (p. 13)

Etiella grisea grisea Hampson

(Pl. 1, fig. 3; Pl. 6, figs 32–35; Pl. 10, fig. 67; Pl. 14, fig. 95)

Etiella grisea Hampson, 1903 : 33. LECTOTYPE ♂, CEYLON (BMNH), here designated [examined].

♂. Wing, 10–12 mm. Labial palps 3 × diameter of eye, third segment one quarter length of second. Fore wing pattern as in Pl. 1, fig. 3, pale grey with darker, transverse, antemedial fascia.

Genitalia ♂ (Pl. 6, figs 32–35). Juxta with elongate lateral lobes slightly clavate at apex. One valve with very short costal process, other valve with long costal process. Aedeagus with spiny, sclerotized vesica with two large sclerotized patches.

♀. Wing, 8·5–10 mm. Labial palps with third segment half length of second. Fore wing with slightly less distinct pattern than male.

Genitalia ♀ (Pl. 10, fig. 67; Pl. 14, fig. 95). Duct of bursa sclerotized, long and strongly ribbed. Sclerotized signum with small spines, small patch of spines on secondary sac of bursa. Ductus seminalis arising from nearer centre of bursa, enlarged at origin with bursa and with small platelets inside.

DISCUSSION. This subspecies is known only from Ceylon. The morphology of the genitalia is similar to *grisea drososcia* and this latter subspecies has some specimens almost as pale as those from Ceylon, but generally the specimens from Ceylon are separable from the other by their paler grey colour.

BIOLOGY. No information.

DISTRIBUTION. Map 3. Ceylon.

MATERIAL EXAMINED.

Lectotype ♂, CEYLON, 95.91, BM slide no. 13294, in BMNH. 12 specimens, BMNH.

Etiella grisea drososcia Meyrick **stat. n.**

(Pl. 1, figs 5, 6; Pl. 6, figs 36–39; Pl. 10, fig 68; Pl. 11, fig. 80; Pl. 12, figs 85, 87)

Etiella drososcia Meyrick, 1929 : 158. LECTOTYPE ♂, Tahiti (BMNH), [examined].
[*Etiella zinckenella* (Treitschke) sensu Tams, 1935 : 254, misidentification.]

♂. Wing, 9–14 mm. Head as nominate subspecies. Fore wing, pattern as in Pl. 1, figs 5, 6, grey or grey-brown with light coloured costal streak. Wings variably marked, often with black spots on indistinct antemedial fascia.

Genitalia ♂ (Pl. 6, figs 36–39). As nominate subspecies.

♀. Wing, 11–12·5 mm. Pattern and colour as male. Third segment of labial palp half length of second.

Genitalia ♀ (Pl. 10, fig. 68; Pl. 11, fig. 80; Pl. 12, figs 85, 87). As nominate subspecies.

Discussion. The two specimens from Tanimber are much blacker than the others and the single male from Prince of Wales Is. (N. Australia) is slightly larger than the other specimens. The only specimen from the mainland of Australia is a female from Wyndham (W. Australia). The pattern and the distinctness of the median fascia are equally variable over the whole of the range of this subspecies. It is probable that this species is widespread over most Pacific islands; so far no specimens have been seen from Java or Sumatra. It is interesting to speculate whether, since this subspecies is known from pods of legumes, it enters into competition with the widespread *zinckenella*. Will this latter species eventually spread to all the islands and replace *grisea* or will *grisea* become commoner? In Ceylon and other places the two species occur together, but there is no information on the detailed ecology of *grisea*.

Biology. This subspecies has been bred from the pods of *Vigna* (Leguminosae) in Fiji and from *Crotalaria* pods (Leguminosae) in Guam.

Distribution. Map 3. Society Is., Tahiti; Cook Is., Rarotonga; Samoa; Fiji; New Hebrides; Solomon Is., St. Cristobal; Australia, Prince of Wales Is., Monte Bello Is., West Australia; Indonesia, Tanimber; New Guinea; Caroline Is., Truk; Mariana Is., Guam.

Material examined.

Lectotype ♂: Tahiti: nr. Papeete, iii–iv. 1925 (*Cheesman*), BM slide no. 13245, in BMNH. 12 specimens, BMNH. 30 specimens, BPBM, Honolulu. 2 specimens, ANIC, Canberra.

Etiella hobsoni (Butler)

(Pl. 2, figs 7–9; Pl. 7, figs 40–43; Pl. 10, figs 69–71; Pl. 11, fig. 78; Pl. 13, figs 88, 89; Pl. 14, figs 96–98)

Ceratamma hobsoni Butler, 1880 : 689. LECTOTYPE ♂, Formosa (BMNH), here designated [examined].
Etiella hobsoni Butler; Ragonot, 1893 : 578.
Etiella hobsoni Butler; Shibuya, 1928 : 94.
Etiella melanella Hampson & Ragonot, 1901 : 558, Holotype ♂, Australia (BMNH), [examined]. **Syn. n.**
Etiella hopsoni, misspelling, Caradja, 1939 : 20.

♂. Wing, 7–9 mm. Labial palps 2½ × diameter of eye, third segment one third length of second. Fore wing, pattern as in Pl. 2, figs 7–9, grey-black with brown or black transverse fascia. Hind wings smoky grey.

Genitalia ♂ (Pl. 7, figs 40–43). Costal process of valve on one side 1¼ × length of other side Juxta lightly sclerotized, apex swollen and hairy. Aedeagus with two large cornuti.

♀. Wing, 7–10 mm. Colour and pattern as male.

Genitalia ♀ (Pl. 10, figs 69–71; Pl. 11, fig. 78; Pl. 13, figs 88, 89; Pl. 14, figs 96–98). Ductus bursae heavily sclerotized with prominent longitudinal ribbing. Ductus seminalis with small platelets with very broad opening near centre of bursa.

DISCUSSION. This small species is similar externally to *walsinghamella* but lacks the prominent yellow-orange fascia of that species and has black, not reddish fore wings. The main variation between specimens of *hobsoni* is in the colour, or the presence of, the transverse fascia of the fore wing. Some specimens are without this fascia, others have it in a very incomplete form. There is little other morphological variation between specimens from as far apart as Formosa and Australia.

BIOLOGY. No information.

DISTRIBUTION. Map 4. Australia, Queensland, Northern Territory, South Australia; New Guinea; Solomon Is.; New Britain; Caroline Is., Truk; Indonesia, Wetar, Timor; Formosa.

MATERIAL EXAMINED.

Lectotype ♂ (*hobsoni*), FORMOSA, 80–115, BM slide no. 13247, in BMNH. Holotype ♂ (*melanella*), AUSTRALIA: Adelaide, vii. [18]91, BM slide no. 13270, in BMNH. 25 specimens, BMNH. 1 specimen, SAM, Adelaide. 32 specimens, BPBM, Honolulu.

Etiella walsinghamella Ragonot

(Pl. 2, figs 10–12; Pl. 7, figs 46–49; Pl. 10, figs 72–74; Pl. 13, figs 90–92; Pl. 15, figs 99–101)

Etiella walsinghamella Ragonot, 1888 : 27. Holotype ♂, NEW GUINEA (BMNH) [examined].
Etiella walsinghamella Ragonot; Ragonot, 1893 : 577.
Etiella flavofasciella Inoue, 1959 : 299, Holotype ♂, JAPAN (Kyushu University Coll., Japan). [not examined]. **Syn. n.**

♂. Wing, 8–12 mm. Labial palps 3¼ × diameter of eye, third segment less than one quarter of second. Fore wing, pattern as in Pl. 2, figs 10–12, brown or reddish brown with yellow-orange fascia. Hind wings smoky grey.

Genitalia ♂ (Pl. 7, figs 46–49). Similar to *zinckenella*. Valve with slightly less slender apex. Aedeagus with cornuti more slender than *zinckenella*.

♀. Wing, 8–11 mm. Pattern as male but with fore wings usually with more red scales and hind wings darker, almost black. Narrow median fascia usually present on fore wing.

Genitalia ♀ (Pl. 10, figs 72–74; Pl. 13, figs 90–92; Pl. 15, figs 99–101). Similar to *zinckenella*, signum longer in proportion to total length of bursa and ductus bursae usually longer in *walsinghamella* than *zinckenella*.

DISCUSSION. Externally the pattern and general appearance of this species separate it from *zinckenella* but the genitalia of these two species are similar. The male of *walsinghamella* has shorter costal processes on the valve and the juxta lobes are blunter at the apex than *zinckenella*. In the females, the ductus bursae and signum are longer in *walsinghamella* than *zinckenella* (not clear in figs 74, 75 due to slight differences in magnification). *E. walsinghamella* is closely related to *zinckenella* and has only diverged slightly from it. No overlap in pattern between these two species has been found but some of the specimens of *zinckenella* from New Guinea approach *walsinghamella* in general colour. Within the material of *walsinghamella* examined, the Australian and Japanese specimens are larger than those from New Guinea, with more red in the fore wing but there is an overlap in these characters and no clear subspecific trend on external characters is shown.

BIOLOGY. No information.

DISTRIBUTION. Map 5. Australia, Queensland; New Guinea; Japan.

MATERIAL EXAMINED.

Holotype ♂ (*walsinghamella*), NEW GUINEA (specimen lacks abdomen), in BMNH. Paratype ♂ and ♀ (*flavofasciella*), JAPAN: Orio, Fukuoka Pref., 28.viii.1958 (*Kawamura*), in BMNH. 8 specimens, BMNH. 8 specimens, SAM, Adelaide. 1 specimen, BPBM, Honolulu.

Etiella zinckenella (Treitschke)

(Pl. 3, figs 13–18; Pl. 4, figs 23, 24; Pl. 8, figs 50–54, 56; Pl. 9, fig. 64; Pl. 10, fig. 75; Pl. 11, fig. 79; Pl. 15, fig. 102)

Phycis zinckenella Treitschke, 1832 : 201. Lectotype ♀, SICILY (TM) [examined].
Phycis etiella Treitschke, 1835 : 174 [unnecessary replacement name].
Pempelia Etiella zinckenella (Treitschke); Zeller, 1839 : 179.
Rhamphodes zinckenella (Treitschke); Guenée, 1845 : 319.
Rhamphodes etiella (Treitschke); Guenée, 1846 : 81.
Etiella zinckenella (Treitschke); Zeller, 1846 : 733.
Etiella zinckenella (Treitschke); Heinemann, 1865 : 154.
Chilo colonnellus Costa, [1836] : [243]. Type, ITALY [type-series not traced].
Chilo majorellus Costa, [1836] : [241]. Holotype ♂, ITALY [type-series not traced].
Mella dymnusalis Walker, 1859 : 1018. Holotype ♀, SIERRA LEONE (BMNH) [examined].
Rhamphodes heraldella Guenée, 1862 : G.72. Holotype ♂, REUNION (MNHN) [not examined].
Alata anticalis Walker, 1863 : 108. LECTOTYPE ♂, CHILE (BMNH) here designated [examined].
Arucha indicatalis Walker, 1863 : 202. Holotype ♂, SOUTH AFRICA (BMNH) [examined].
Alata hastiferella Walker, 1866 : 1725. Holotype ♂, GRENADA (BMNH) [examined].
Etiella zinckenella ab. *decipiens* Staudinger, 1870 : 195. Type? EUROPE, [type-series not traced].
Etiella spartiella Rondani, 1876 : 19 Holotype ♂ [ITALY?], [not examined].
Crambus sabulinus Butler, 1879 : 455. Holotype ♂, JAPAN (BMNH), [examined].
Etiella madagascariensis Saalmüller, 1879–80 : 307. Type, MADAGASCAR [type-series not traced].
Etiella zinckenella (Treitschke); Meyrick, 1879 : 203.
Etiella schisticolor Zeller, 1881 : 178. LECTOTYPE ♂, U.S.A. (BMNH), here designated [examined].

Etiella zinckenella (Treitschke); Meyrick, 1883 : 156.
Etiella villosella Hulst, 1887 : 133. Holotype ♂, U.S.A. (AMNH) [not examined].
Etiella zinckenella (Treitschke); Hulst, 1890 : 169.
Etiella rubribasella Hulst, 1890: 170. Holotype ♂, U.S.A., (AMNH) [not examined].
Etiella zinckenella (Treitschke); Ragonot, 1893 : 572.
Etiella zinckenella (Treitschke); Hampson, 1896 : 108.
[*Etiella scitivittalis* (Walker) sensu Hampson, 1896 : 108, misidentification.]
Etiella zinckenella (Treitschke); Oberthür, 1922 : 333.
Etiella zinckenella (Treitschke); Shibuya, 1928 : 93, partim.
Etiella zinckenella (Treitschke); Janse, 1944 : 15.
Etiella zinckenella (Treitschke); Heinrich, 1956 : 99.
Etiella zinckenella (Treitschke); Commonwealth Institute of Entomology, 1959, Map 105.
Etiella zinckenella (Treitschke); Whalley, 1970 : 45.

♂. Wing, 10–15 mm. Labial palps 3 × diameter of eye. Fore wing, pattern as in Pl. 3, figs 13–18, variably coloured, red-brown to black-brown. White costal streak usually present. Antemedial fascia orange-brown to orange-red, fascia edged with black on antemedial side, frequently gold iridescence on fascia.

Genitalia ♂ (Pl. 8, figs 50–54, 56; Pl. 9, fig. 64). Costal processes on valves long. Juxta with two broad, elongate, lateral lobes, rounded at apex. Aedeagus with large sclerotized cornuti in vesica and many small spines.

♀. Wing, 6–15 mm. Third segment of labial palp longer than male. Colour and pattern similar.

Genitalia ♀ (Pl. 10, fig. 75; Pl. 11, fig. 79; Pl. 15, fig. 102). Ductus bursae long, sclerotized, tapering slightly towards opening with bursa. Secondary sac large, sclerotized, containing spines. Large spiny signum on main bursal sac. Ductus seminalis, without platelets inside, arising near origin of ductus bursae and bursa itself.

DISCUSSION. This species is common in most tropical and many temperate countries, where it is a pest of legumes. Specimens of *zinckenella* vary considerably in size and, to a lesser extent, in colour, although the pattern is fairly constant. There is a tendency for specimens from North America to be greyer than those from the rest of the world but this is by no means constant. The only other small difference between Old and New World specimens is in the length of the ductus bursae of the female; this is slightly shorter in the American specimens than in the others, but again this is not constant, some overlap occurring. In Morocco some large dark specimens were included in a series of more normally coloured ones, although no other differences could be found in this series and the genitalia were typical of the species. A series of specimens from Egypt were smaller and more sandy coloured than the more typical red or black-brown. From the rest of the African continent there is a wide range of size and colour variants with series of particularly small specimens from Madagascar. Specimens from the Indian subcontinent, Malaya, China, and Japan were similar to those from the Mediterranean region. In Indonesia some variation was found in wing colour but in New Guinea a distinct form occurs with dark hind wings, instead of the more typical pale smoky brown ones. Over the rest of the range a few specimens were found with this darker hind wing but the New Guinea specimens and some from the Solomon Islands were very dark. No other differences have been found between these specimens of *zinckenella*, no evidence of seasonal or food-plant forms were found but the data was mostly too fragmentary to examine this aspect. In most specimens the genitalia were similar, little intra-specific variation was found although certain structures varied slightly. These were the length of the costal processes of the males, the shape and extent of the spines in the vesica and in the females in the extent of the signum. Variation in all these characters was found equally in specimens from all parts of the range of *zinckenella*.

BIOLOGY. Pest of seeds of legumes throughout the world, recorded from 30 species of 21 genera (Naito, 1961). Detailed accounts of the biology and larvae will be found in Naito (1961), Oatman (1967) and Stone (1968). The eggs are laid in the seed-pod of the legume and the larvae bore into the pods, feeding on the seeds. Figures for the length of life-cycle vary but Stone (1968) gives from 2 months to 9·9 months at 61°F. The larvae, after feeding on the seeds, bite their way out and pupate in the soil, forming a small cocoon of soil.

Specimens have been examined from all the countries in the following list. Although I have not seen the Costa types (*majorellus*, *colonnellus*) I have examined topotypic material and I agree with Zeller (1846 : 751) that these two are just redescriptions of *zinckenella*.

DISTRIBUTION. Map 6. All Mediterranean countries and Black Sea area; Southern Germany, Austria. The whole African continent, north and south of Sahara, Tenerife, São Thomé, Principé, Madagascar, Aldabra, Comoro Is., Seychelles. All countries in the Oriental region; China, Japan, Philippines, Formosa; Hainan, New Guinea, Indonesia, New Caledonia, Solomon Is., Samoa. In Australia from Queensland, Prince of Wales Is. From both North and South America and Canada, Galapagos and most West Indian Islands, Cuba, Puerto Rico.

It has not been recorded from U.K., Northern Europe, Hawaii, New Zealand, and many Pacific Islands.

MATERIAL EXAMINED.

Lectotype ♀ (*zinckenella*), SICILY, Treits. 3456, BM slide no. 12121, in TM, Budapest. Holotype ♀ (*dymnusalis*), SIERRA LEONE, in BMNH. Lectotype ♂, (*anticalis*) ST. JAGO [Santiago] (*Darwin*), in BMNH. Holotype ♂ (*indicatalis*), S. AFRICA, in BMNH. Lectotype ♂ (*schisticolor*), CALIFORN., *E. schisticolor* (*Grote*), 97, in BMNH. Holotype ♂ (*sabulinus*), JAPAN, in BMNH. Holotype ♂ (*hastiferella*), GRENADA, in BMNH. Over 1000 specimens, mostly BMNH. 25 specimens, BPBM, Honolulu.

Etiella behrii (Zeller)

(Pl. 4, figs 19–22; Pl. 8, figs 55, 57; Pl. 9, figs 58–63; Pl. 10, fig. 76; Pl. 11, figs 81, 82; Pl. 12, fig. 84; Pl. 15, fig. 103)

Phycis behrii Zeller, 1848b : 883. LECTOTYPE ♀, AUSTRALIA (BMNH), here designated [examined].

Alata consociella Walker, 1866 : 1724. Holotype ♀, AUSTRALIA (BMNH) [examined].

Alata subaurella Walker, 1866 : 1724. LECTOTYPE ♂, AUSTRALIA (BMNH), here designated [examined].

Etiella ochristrigella Ragonot, 1888 : 27, LECTOTYPE ♀, NEW GUINEA (BMNH), here designated [examined]. **Syn. n.**
[*Etiella zinckenella* sensu auct., nec Zeller, misidentifications.]
Etiella zinckenella (Treitschke) sensu Shibuya, 1928 : 93, partim, misidentification.]
[*Etiella behrii* (Zeller) sensu Evans, 1952 : 181, misidentification.]

♂. Wing, 10–13 mm. Externally similar to *zinckenella* but often greyer and always with more black spots on the wings. Fore wing, pattern as in Pl. 4, figs 19–22.

Genitalia ♂ (Pl. 8, figs 55, 57; Pl. 9, figs 58–63). Differing from *zinckenella* in shape of valve, one costal process noticeably shorter than other (but not as short as in *chrysoporella*), juxta with long, slender, rather parallel-sided lobes. Aedeagus with more slender and smaller cornuti than *zinckenella*.

♀. Wing 8·5–12 mm. Similar to female *zinckenella*, more black spots on fore wing but otherwise difficult to separate externally.

Genitalia ♀ (Pl. 10, fig. 76; Pl. 11, figs 81, 82; Pl. 12, fig. 84; Pl. 15, fig. 103). Differing from all other species in the genus in having the secondary sac at the end of a long duct. Neck of ductus bursae short. Ductus seminalis with small spines in first part, opening near base of bursal sac (i.e. away from ductus bursae).

DISCUSSION. This species has long been confused with *zinckenella* and the two cannot be reliably separated on external characters. In the male *behrii*, the process on the base of the antennal segment is larger than in *zinckenella* but both species can be easily separated on genitalic characters. *E. behrii* is wide spread in Australia and probably occurs in most of Indonesia although I have seen specimens from only a few of the islands. The Malayan and Formosan specimens are slightly darker than the Australian ones but the genitalia are similar. As with all species in the genus the darker colour tends to fade with the increasing age of the specimen. At present the species is known from the mainland of China only from a few specimens from Hong Kong. It will probably prove to be more widespread. Less variation was found in size of specimens of *behrii* than in *zinckenella*.

BIOLOGY. *E. behrii* has been bred from pods of Lucerne and Ground-nuts (both Leguminosae).

DISTRIBUTION. Map 7. Australia, all states; New Guinea; New Hebrides; Malaya; Indonesia, Borneo, Tanimber; Formosa; Hong Kong.

MATERIAL EXAMINED.

Lectotype ♀ (*behrii*), AUSTRALIA: Adelaide, BM slide no. 11163, in BMNH. Lectotype ♀ (*ochristrigella*), NEW GUINEA: Port Moresby, x. 1887–i. 1888 (*Kowald*), BM slide no. 13248, in BMNH. Lectotype ♂, (*subaurella*), AUSTRALIA: Sydney, BM slide no. 13240, in BMNH. Holotype ♀ (*consociella*), AUSTRALIA: Moreton Bay, in BMNH. 72 specimens, BMNH. 42 specimens, ANIC, Canberra. 37 specimens, SAM, Adelaide. 25 specimens, BPBM, Honolulu.

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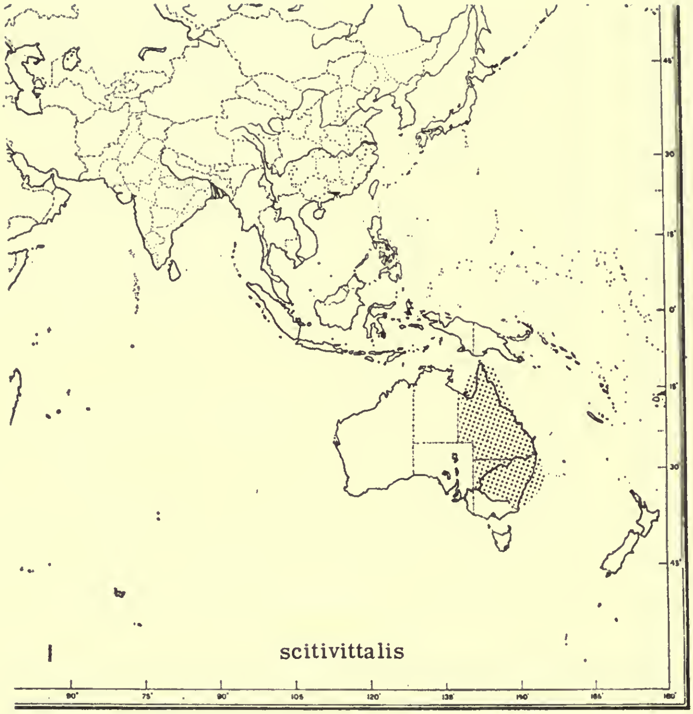
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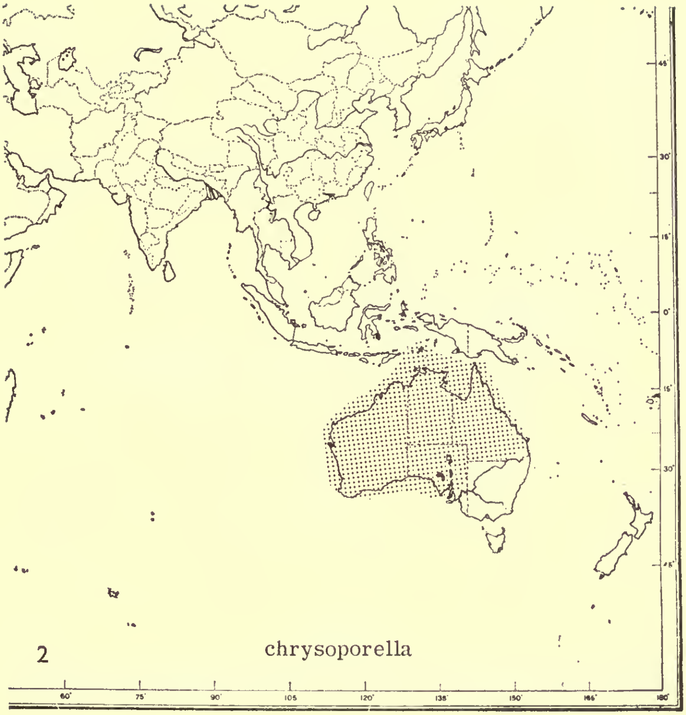
Map 1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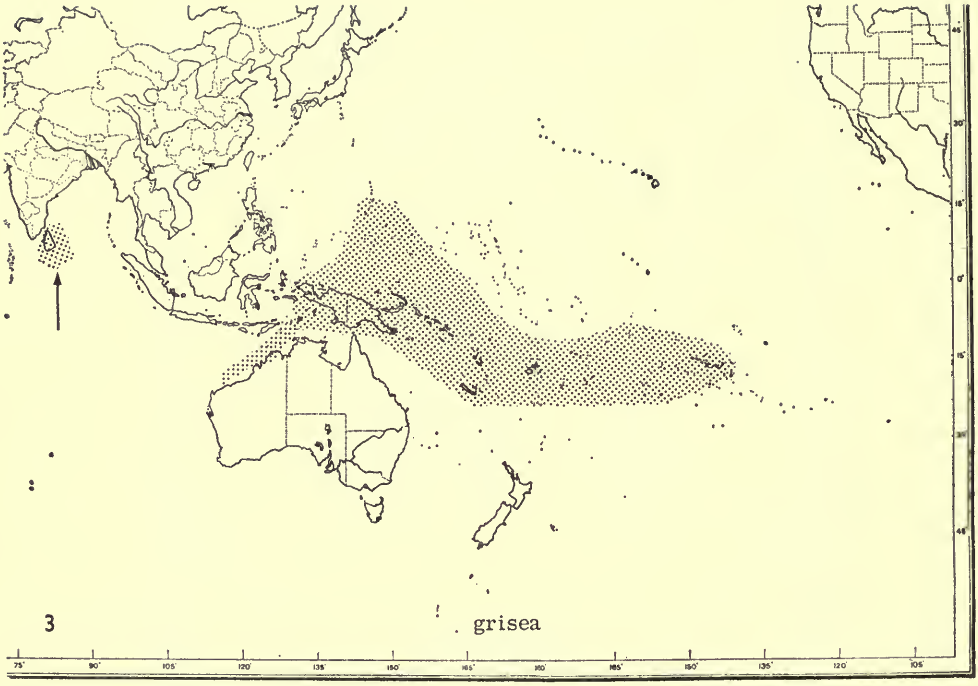
MAP 2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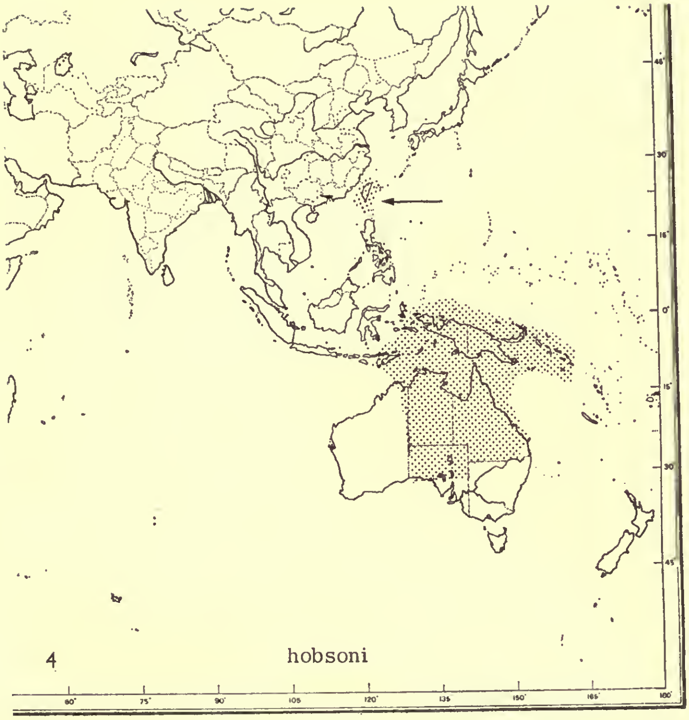
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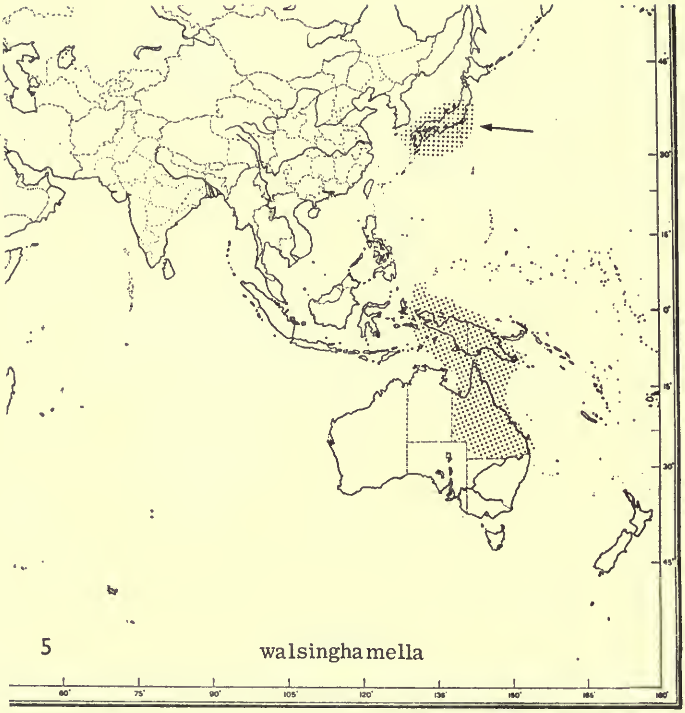
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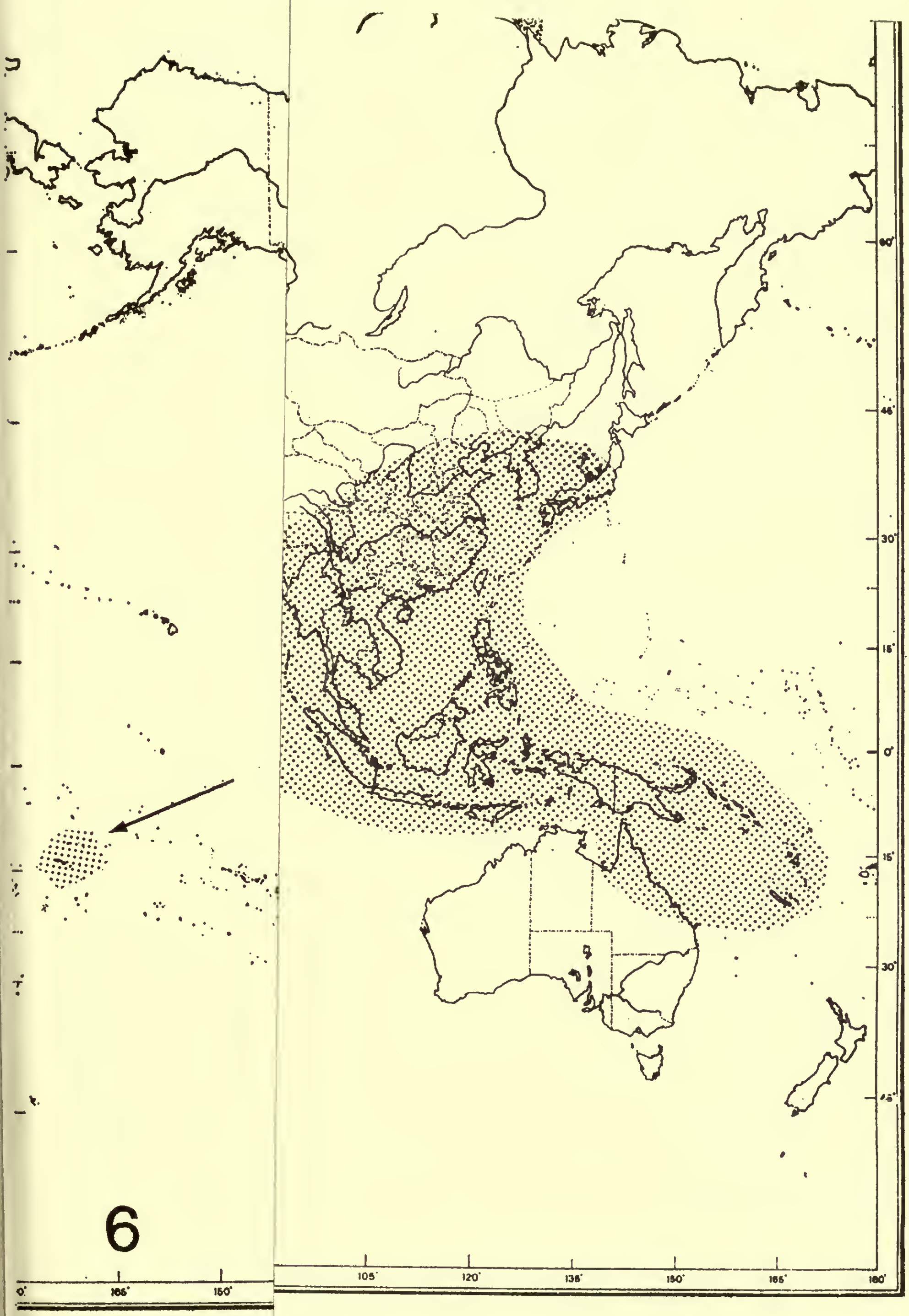
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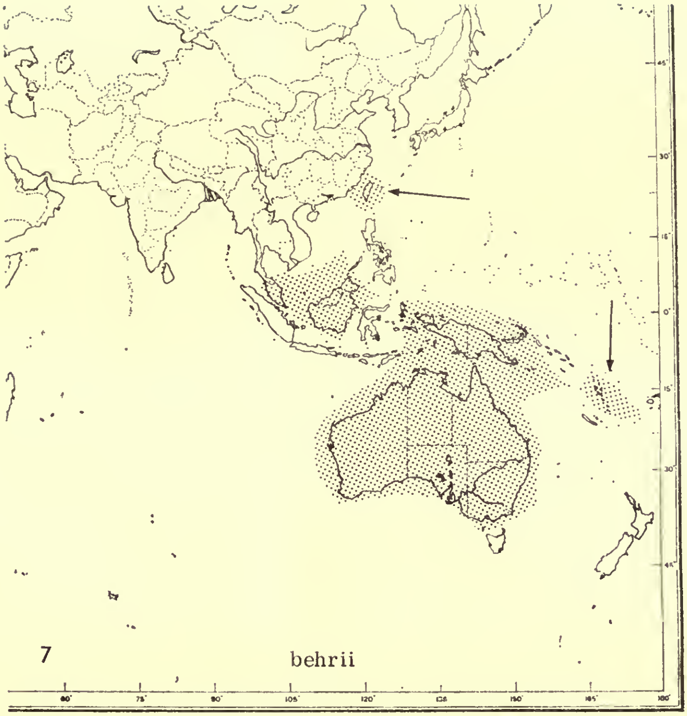
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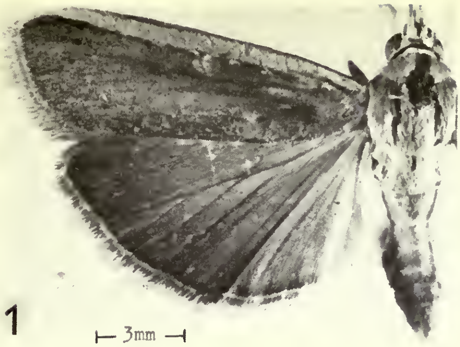
Map 7

PLATE 1

Fig. 1. *Etiella scitivittalis* Walker, Australia.
Fig. 2. *E. chrysoporella* Meyrick, Tanimber.
Fig. 3. *E. grisea grisea* Hampson, Ceylon.
Fig. 4. *E. chrysoporella* Meyrick, Australia.
Fig. 5. *E. grisea drososcia* Meyrick, Tanimber.
Fig. 6. *E. grisea drososcia* Meyrick, Tahiti.



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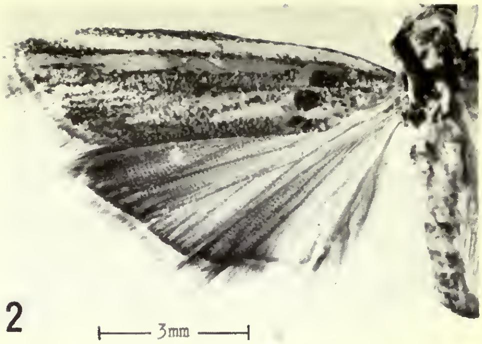

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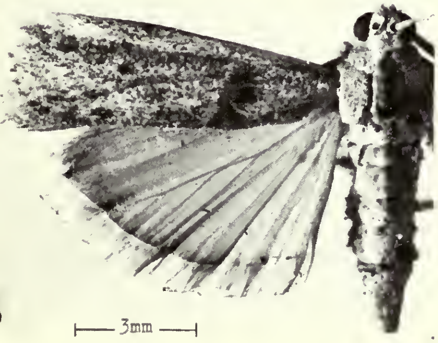

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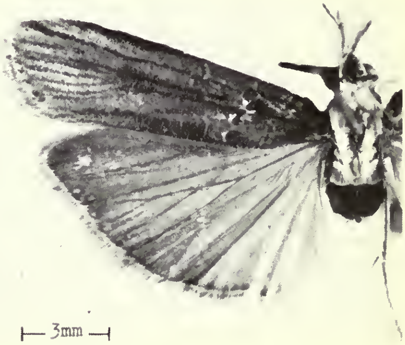

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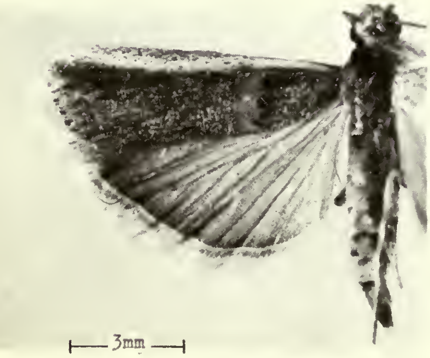

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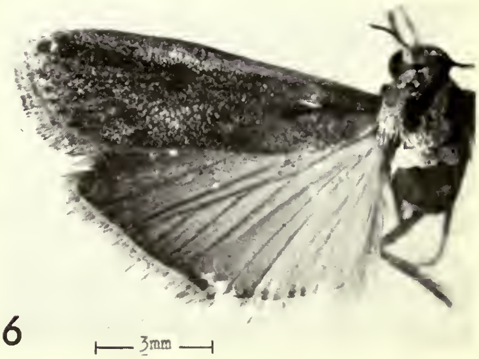

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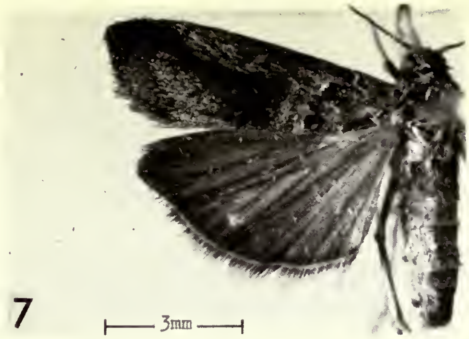
PLATE 2

Fig. 7. *Etiella hobsoni* Butler, Formosa.
Fig. 8. *E. hobsoni* Butler, Formosa.
Fig. 9. *E. hobsoni* Butler, Australia.
Fig. 10. *E. walsinghamella* Ragonot, Papua.
Fig. 11. *E. walsinghamella* Ragonot, Papua.
Fig. 12. *E. walsinghamella* Ragonot, Australia.



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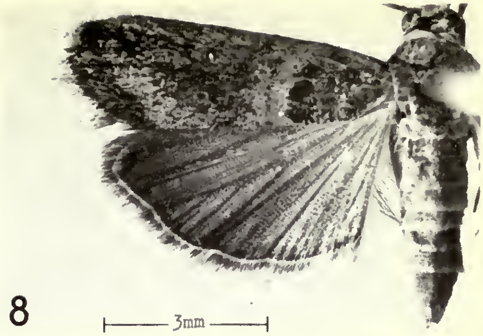

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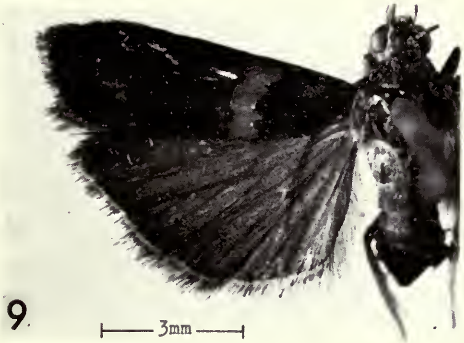

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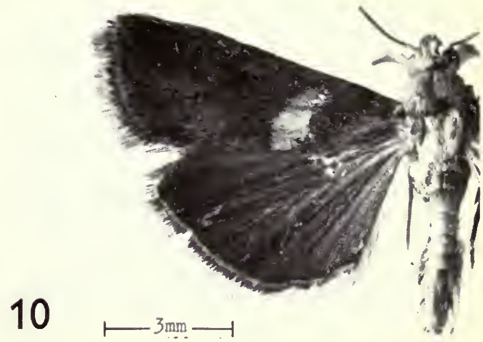

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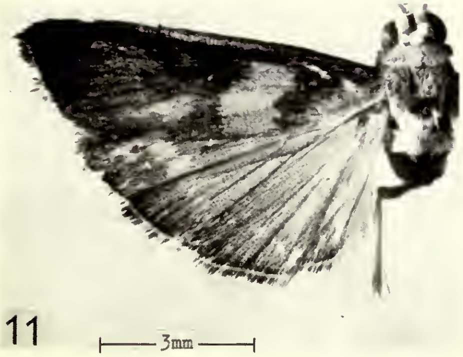

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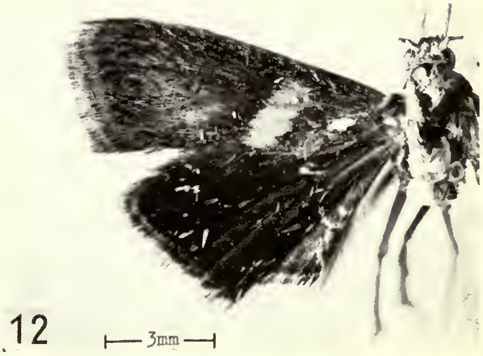

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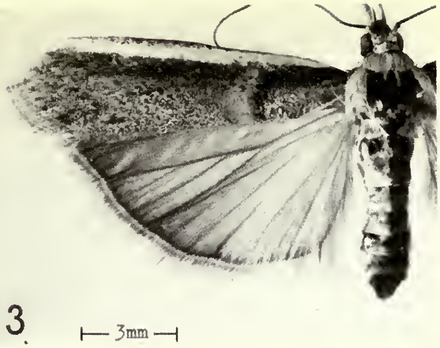
PLATE 3

Fig. 13. *Etiella zinckenella* Treitschke, Europe.
Fig. 14. *E. zinckenella* Treitschke, Europe.
Fig. 15. *E. zinckenella* Treitschke, Madagascar.
Fig. 16. *E. zinckenella* Treitschke, Madagascar.
Fig. 17. *E. zinckenella* Treitschke, Papua.
Fig. 18. *E. zinckenella* Treitschke, U.S.A.



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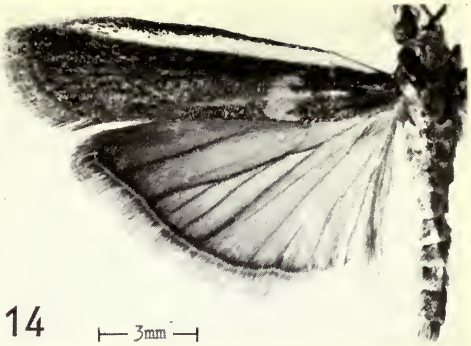

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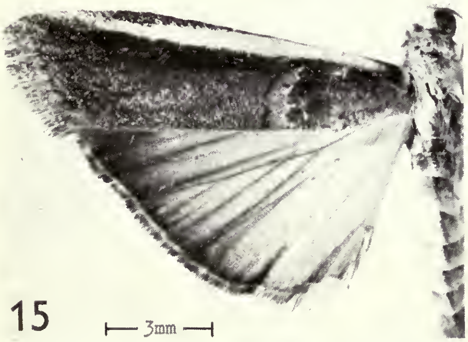

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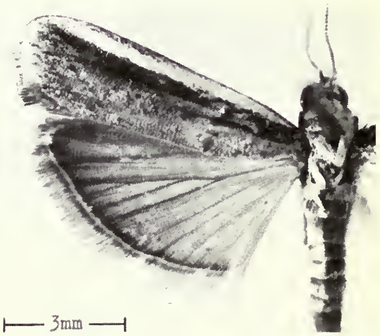

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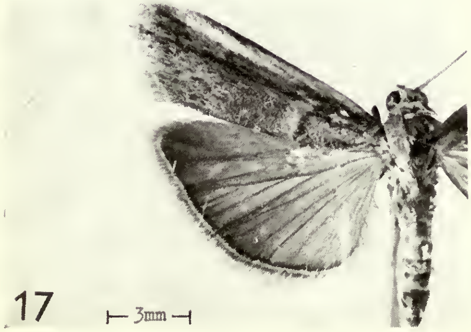

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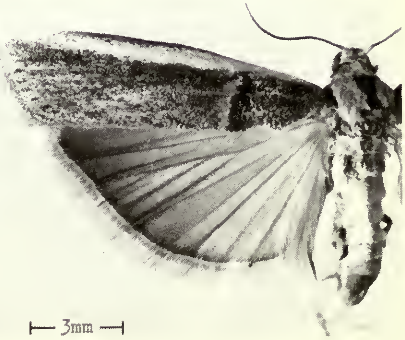

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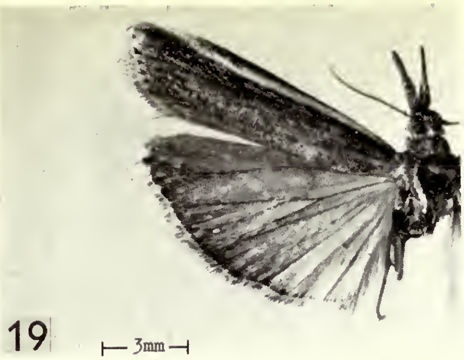
PLATE 4

Fig. 19. *Etiella behrii* Zeller, Australia, holotype.
Fig. 20. *E. behrii* Zeller, Australia.
Fig. 21. *E. behrii* Zeller, Australia.
Fig. 22. *E. behrii* Zeller, Malaysia.
Fig. 23. *E. zinckenella* Treitschke, head dorsal view, showing chaetosema (C).
Fig. 24. *E. zinckenella* Treitschke, head, ventral view, showing pilifers (P) and reduced mandibles (M).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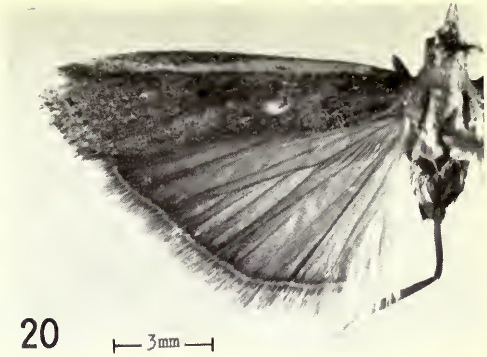
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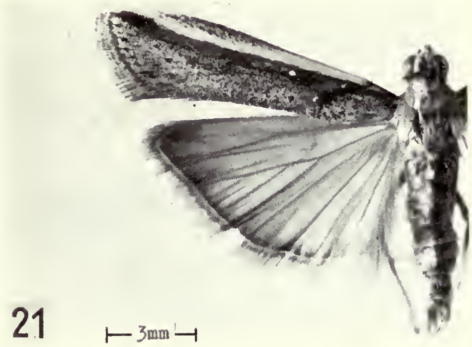
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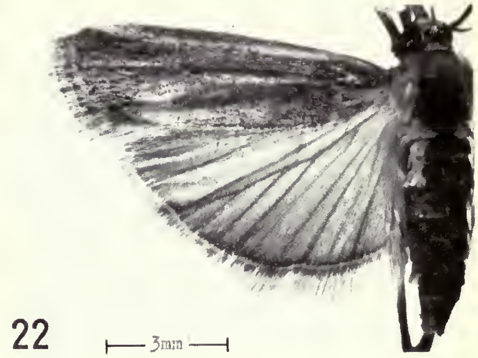
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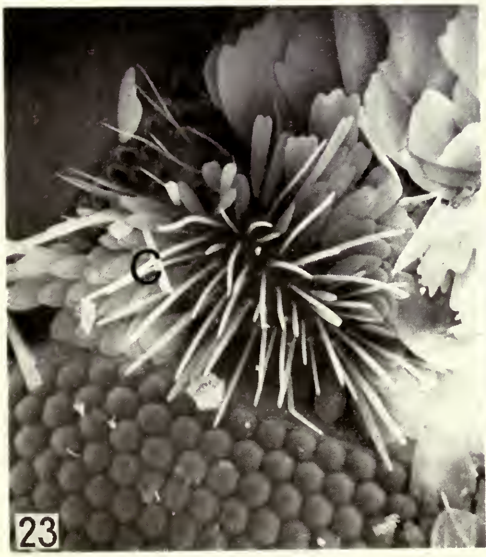
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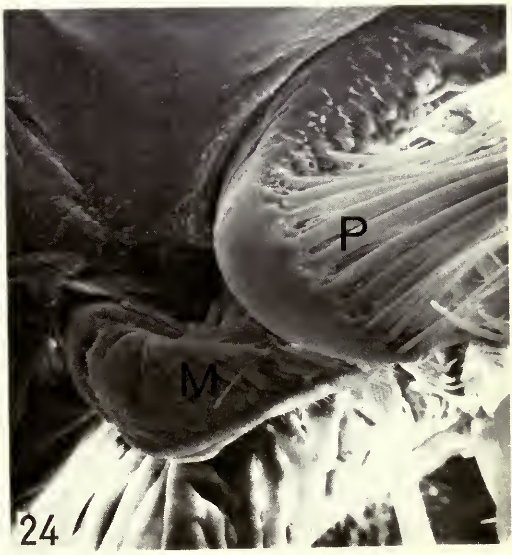
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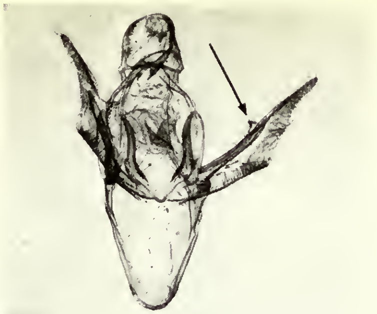
PLATE 5

Fig. 25. *Etiella scitivittalis* Walker, Australia.
Fig. 26. *E. scitivittalis* Walker, details of juxta.
Fig. 27. *E. scitivittalis* Walker, aedeagus.
Fig. 28. *E. scitivittalis* Walker, apex of cornutus in aedeagus. Photo P. Whalley.
Fig. 29. *E. scitivittalis* Walker, cornutus, magnified to show ribbing. Photo P. Whalley.
Fig. 30. *E. chrysoporella* Meyrick, Australia.
Fig. 31. *E. chrysoporella* Meyrick, aedeagus.



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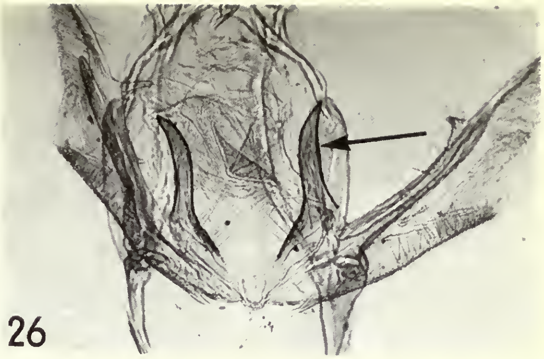

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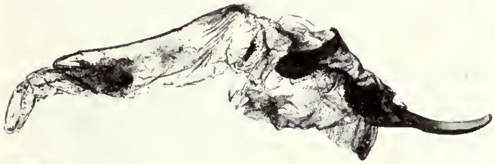

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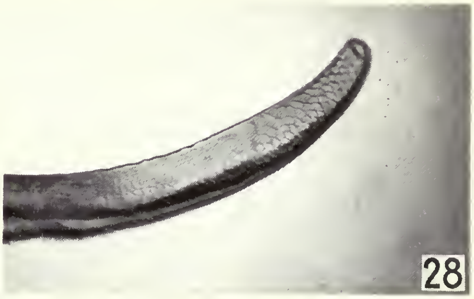

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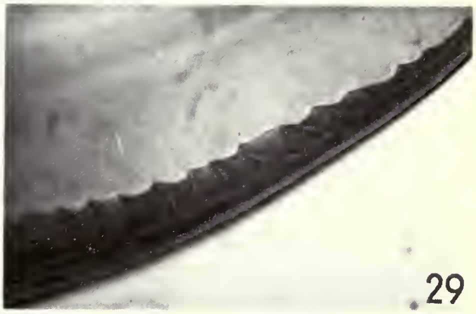

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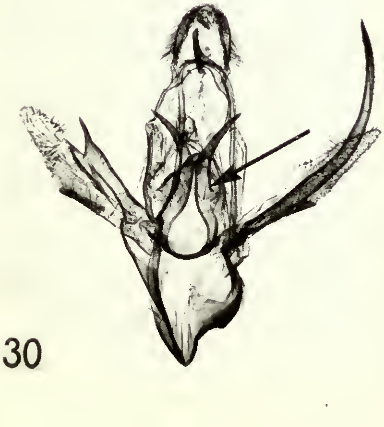

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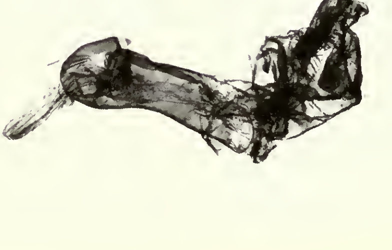

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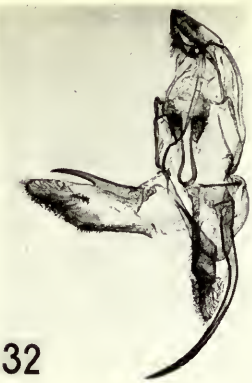
PLATE 6

Fig. 32. *Etiella grisea grisea* Hampson, Ceylon.
Fig. 33. *E. grisea grisea* Hampson, valve. Photo P. Whalley.
Fig. 34. *E. grisea grisea* Hampson, aedeagus. Photo P. Whalley.
Fig. 35. *E. grisea grisea* Hampson, enlargement of apex of aedeagus showing vesica. Photo P. Whalley.
Fig. 36. *E. grisea drososcia* Meyrick, Tahiti.
Fig. 37. *E. grisea drososcia* Meyrick, Tahiti, valve.
Fig. 38. *E. grisea drososcia* Meyrick, Tanimber.
Fig. 39. *E. grisea drososcia* Meyrick, Fiji, valve.



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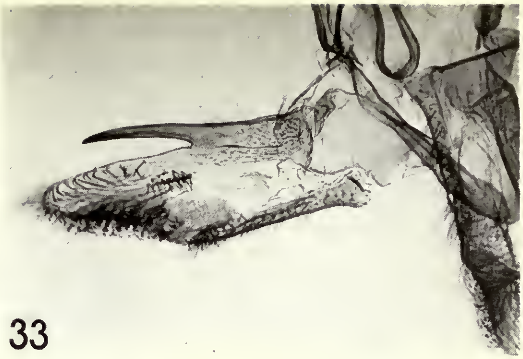

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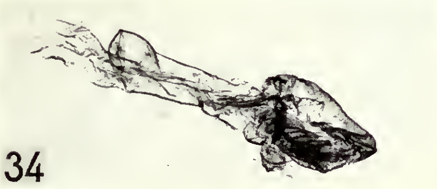

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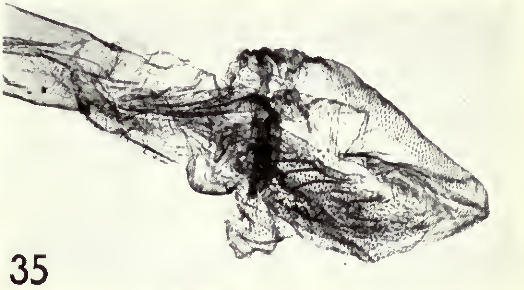

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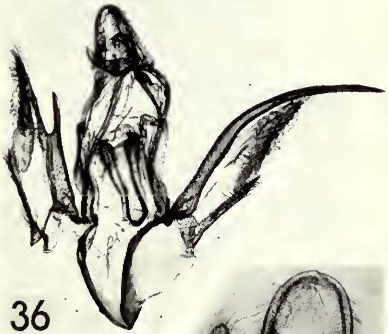

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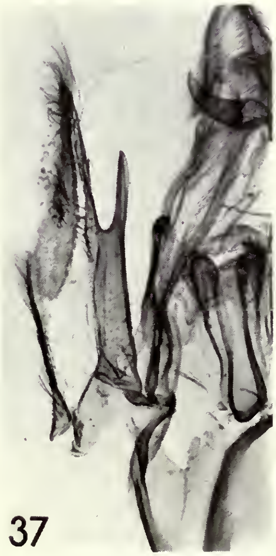

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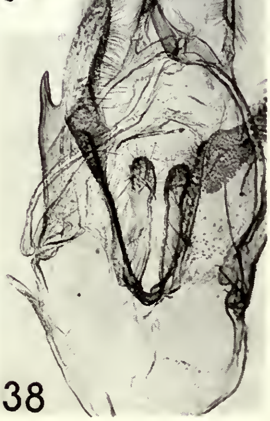

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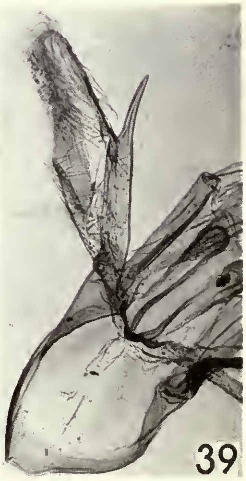

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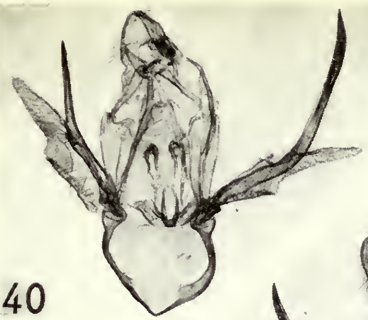
PLATE 7

Fig. 40. *Etiella hobsoni* Butler, Formosa, holotype.
Fig. 41. *E. hobsoni* Butler, Formosa, aedeagus.
Fig. 42. *E. hobsoni* Butler, Australia.
Fig. 43. *E. hobsoni* Butler, Australia, cornuti in aedeagus.
Fig. 44. *E. walsinghamella* Ragonot, Papua.
Fig. 45. *E walsinghamella* Ragonot, aedeagus.
Fig. 46. *E. walsinghamella* Ragonot, Japan (paratype of *flavofasciella* Inoue).
Fig. 47. *E. walsinghamella* Ragonot, Japan, juxta. Photo P. Whalley.
Fig. 48. *E. walsinghamella* Ragonot, Japan, aedeagus.
Fig. 49. *E. walsinghamella* Ragonot, enlargement of vesica.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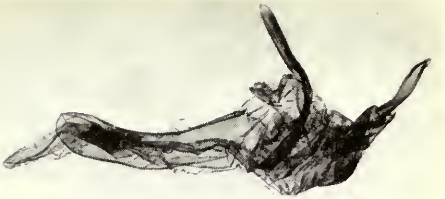
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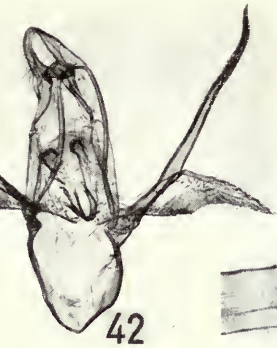
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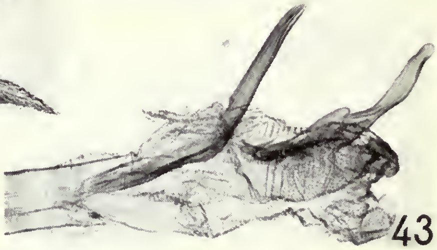
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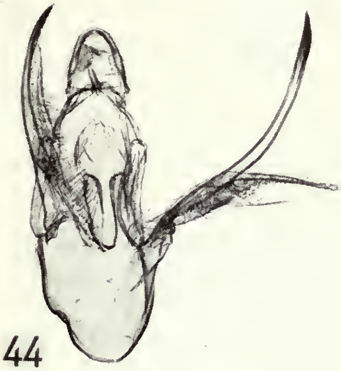
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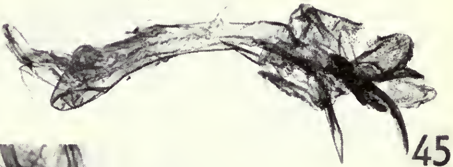
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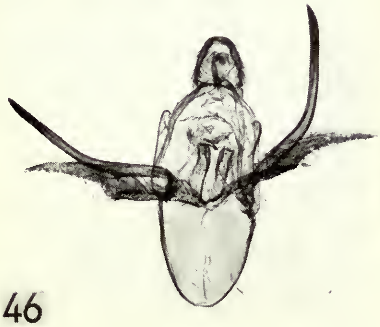
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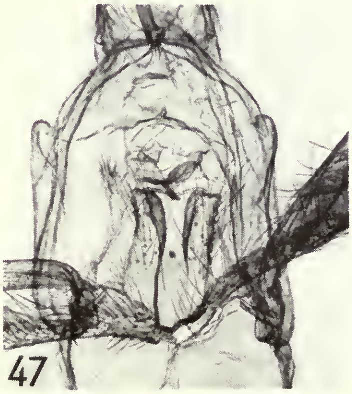
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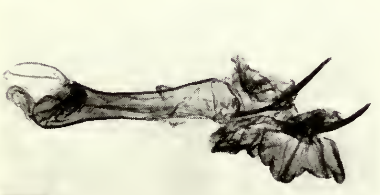
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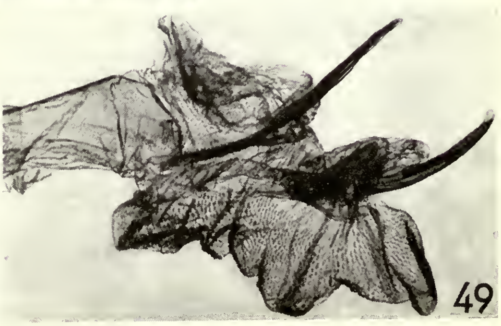
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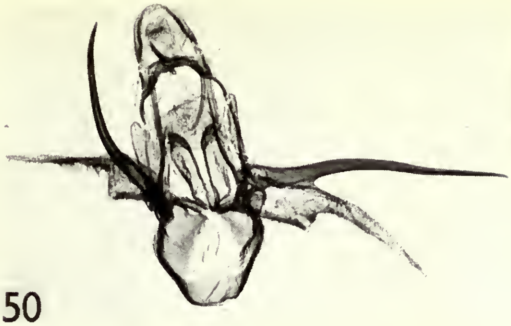
PLATE 8

Fig. 50. *Etiella zinckenella* Treitschke, Europe
Fig. 51. *E. zinckenella* Treitschke, apex of aedeagus, showing vesica.
Fig. 52. *E. zinckenella* Treitschke, aedeagus.
Fig. 53. *E. zinckenella* Treitschke, apical cornutus in aedeagus.
Fig. 54. *E. zinckenella* Treitschke, juxta. Photo P. Whalley.
Fig. 55. *E. behrii* Zeller, juxta.
Fig. 56. *E. zinckenella* Treitschke, valve.
Fig. 57. *E. behrii* Zeller, valve. Photo P. Whalley.



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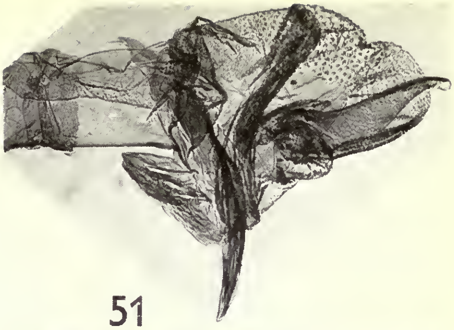

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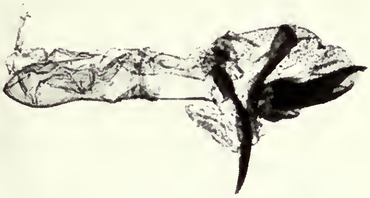

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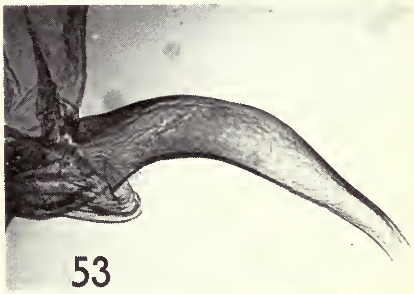

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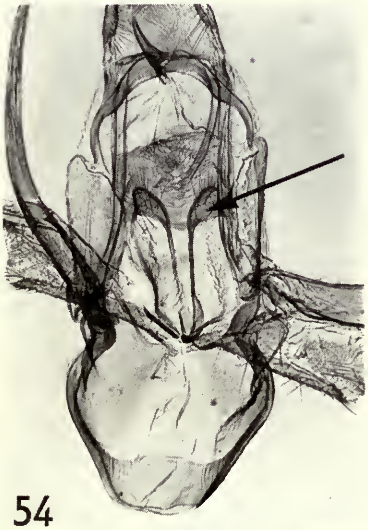

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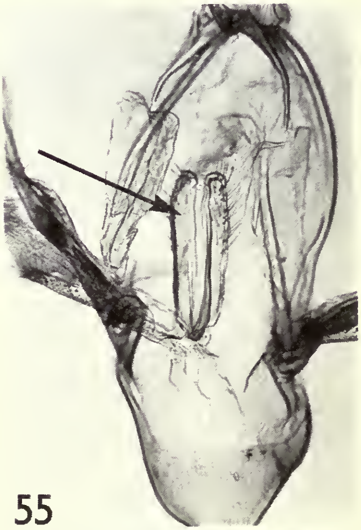

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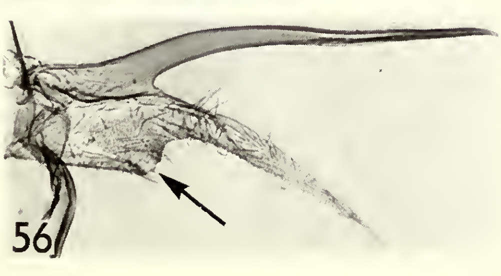

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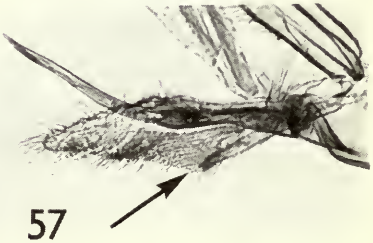
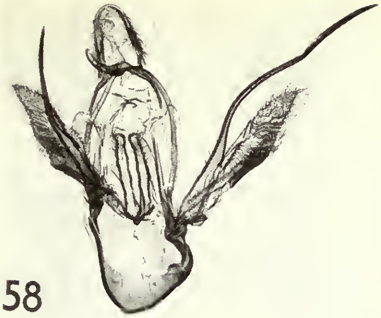


57

PLATE 9

FIG. 58. *Etiella behrii* Zeller, Australia, (holotype *subaurella* Walker)
FIG. 59. *E. behrii* Zeller, aedeagus.
FIG. 60. *E. behrii* Zeller, cornuti in aedeagus.
FIG. 61. *E. behrii* Zeller, Formosa.
FIG. 62. *E. behrii* Zeller, aedeagus.
FIG. 63. *E. behrii* Zeller, cornuti in aedeagus.
FIG. 64. *E. zinckenella* Treitschke, cornuti in aedeagus.



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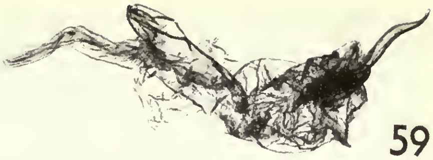

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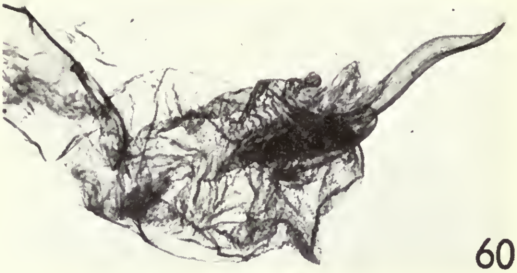

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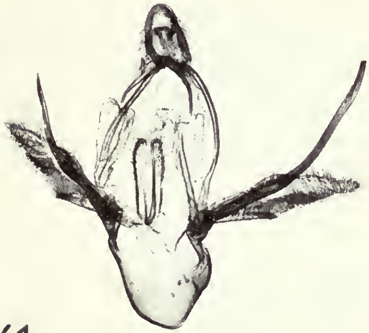

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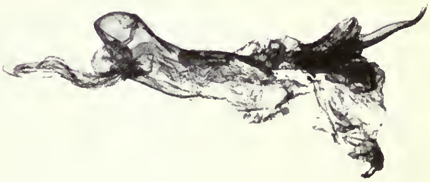

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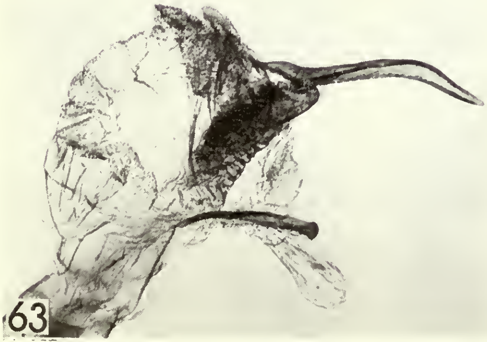

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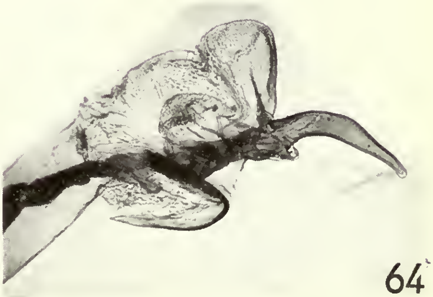


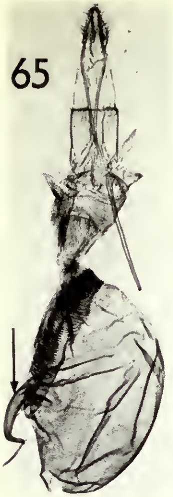
64

PLATE 10

Female genitalia. (Arrows indicate ductus seminalis).

FIG. 65. *Etiella scitivittalis* Walker, Australia.
FIG. 66. *E. chrysoporella* Meyrick, Australia, secondary sac (S).
FIG. 67. *E. grisea grisea* Hampson, Ceylon.
FIG. 68. *E. grisea drososcia* Meyrick, Tahiti, secondary sac (S).
FIG. 69. *E. hobsoni* Butler, Formosa.
FIG. 70. *E. hobsoni* Butler, Australia.
FIG. 71. *E. hobsoni* Butler, Solomons.
FIG. 72. *E. walsinghamella* Ragonot, Japan.
FIG. 73. *E. walsinghamella* Ragonot, Papua.
FIG. 74. *E. walsinghamella* Ragonot, Australia.
FIG. 75. *E. zinckenella* Treitschke, Europe.
FIG. 76. *E. behrii* Zeller, Australia, lectotype, secondary sac (S).

65



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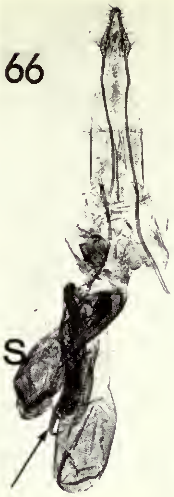

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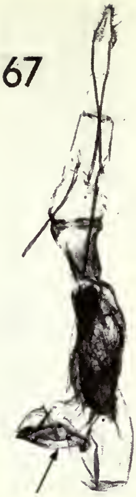

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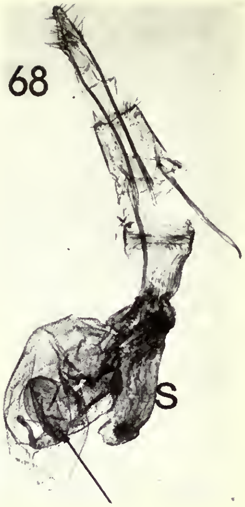

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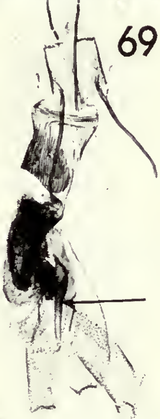

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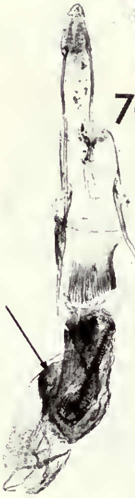

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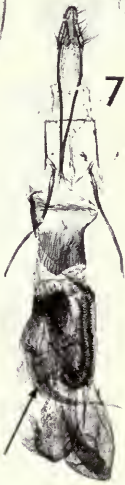

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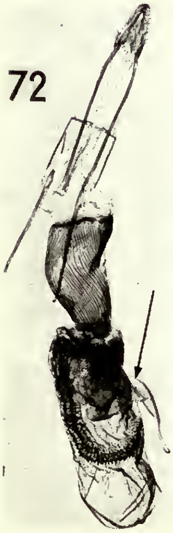

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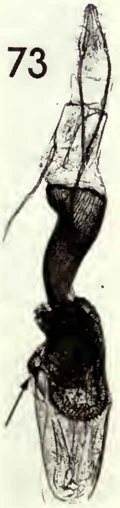

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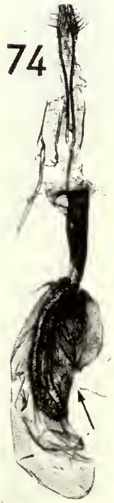

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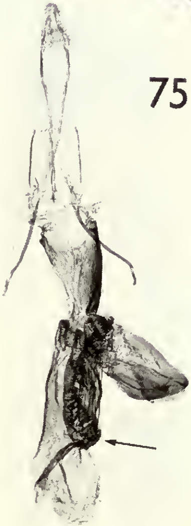

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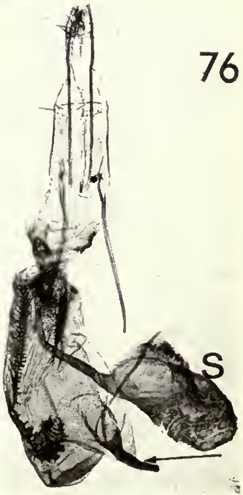
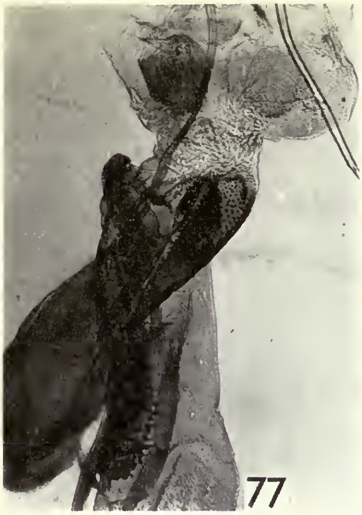


PLATE 11

Fig. 77. *Etiella chrysoporella* Meyrick, ostium and bursa.
Fig. 78. *E. hobsoni* Butler, ostium and bursa.
Fig. 79. *E. zinckenella* Treitschke, ostium.
Fig. 80. *E. grisea drososcia* Meyrick, ductus seminalis on bursa.
Fig. 81. *E. behrii* Zeller, Borneo, ostium, bursa and duct of secondary sac.
Fig. 82. *E. behrii* Zeller, Australia, lectotype, details around ostium.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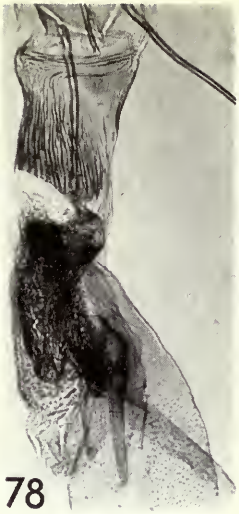
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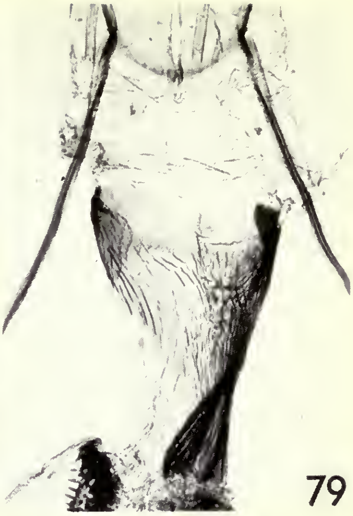
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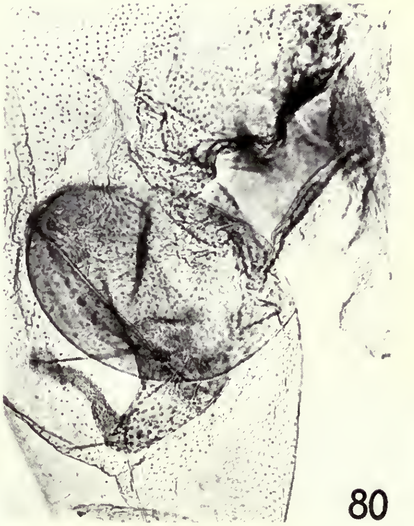
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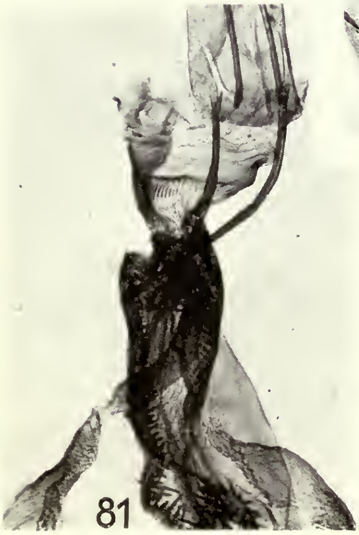
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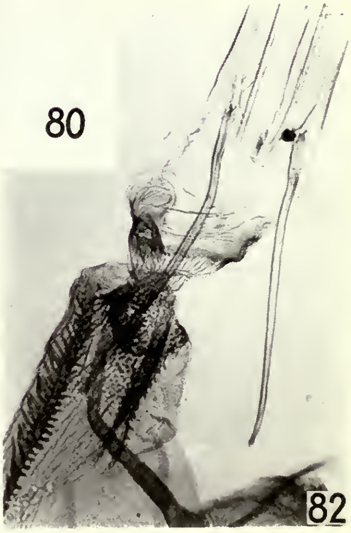
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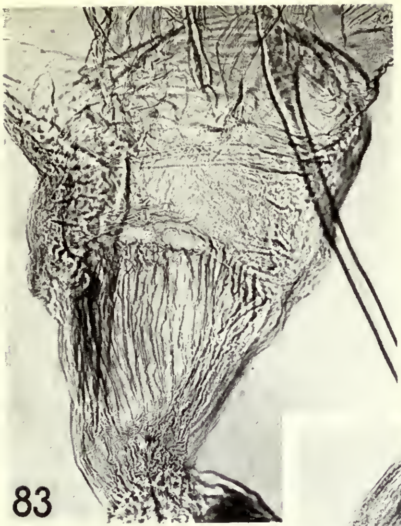
PLATE 12

Fig. 83. *Etiella scitivittalis* Walker, ostium and ductus bursae.
Fig. 84. *E. behrii* Zeller, ostium and ductus bursae.
Fig. 85. *E. grisea drososcia* Meyrick, secondary sac on bursa.
Fig. 86. *E. grisea grisea* Hampson, ostium and ductus bursae.
Fig. 87. *E. grisea drososcia* Meyrick, ostium and ductus bursae.



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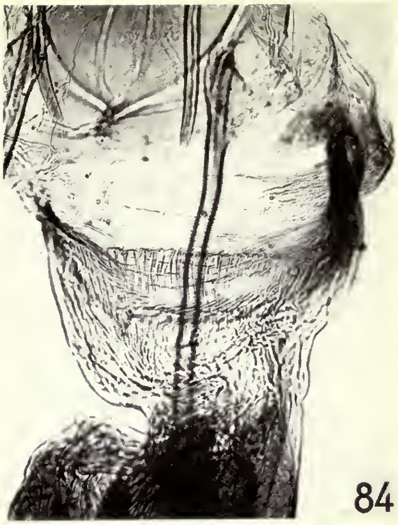

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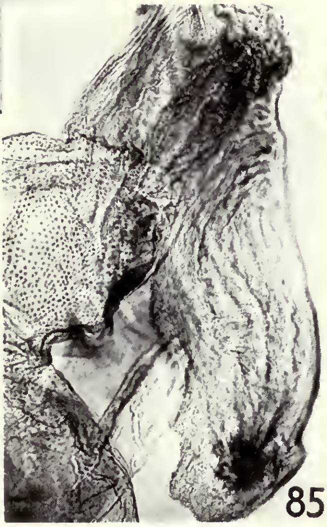

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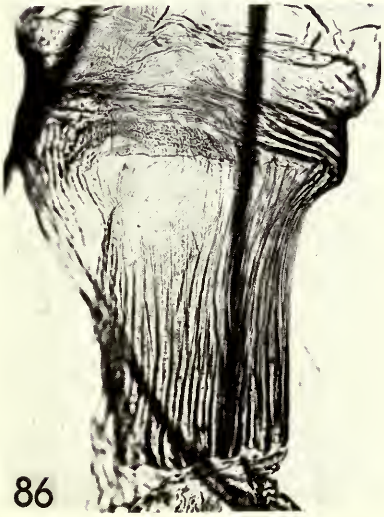

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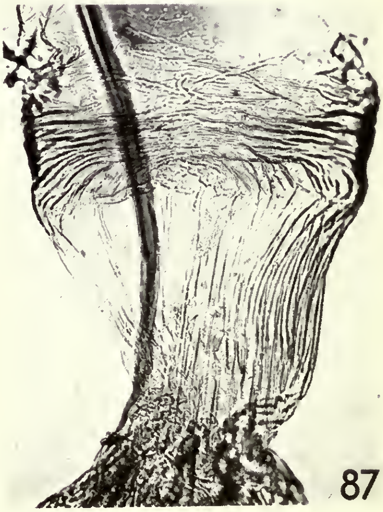

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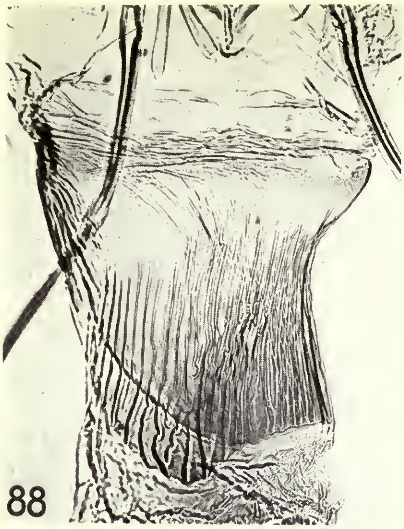
PLATE 13

Fig. 88. *Etiella hobsoni* Butler, Solomons, ostium and ductus bursae.
Fig. 89. *E. hobsoni* Butler, Australia, ostium and ductus bursae.
Fig. 90. *E. walsinghamella* Ragonot, Australia, ostium and ductus bursae.
Fig. 91. *E. walsinghamella* Ragonot, Papua, ostium and ductus bursae.
Fig. 92. *E. walsinghamella* Ragonot, Japan, ostium and ductus bursae.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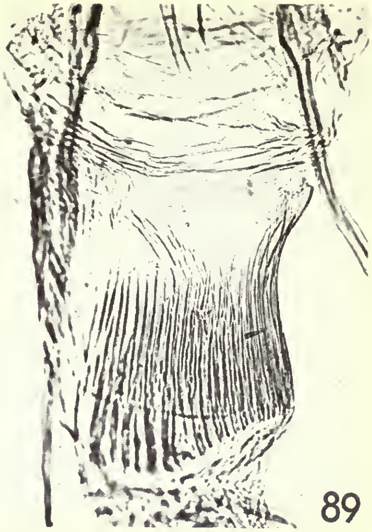
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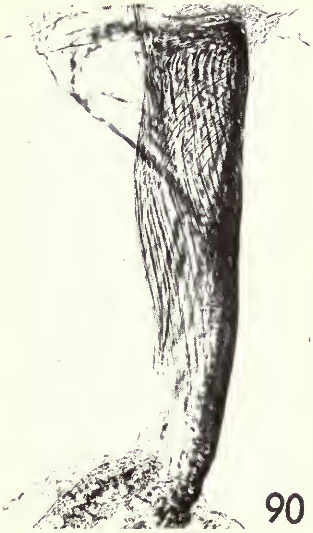
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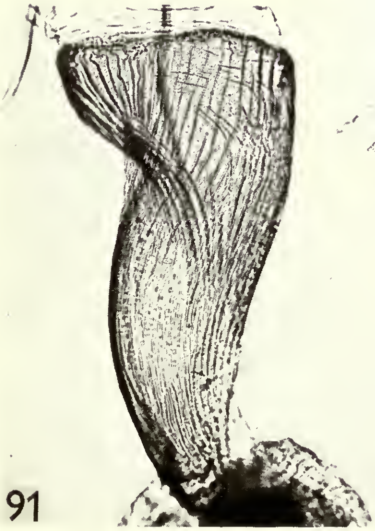
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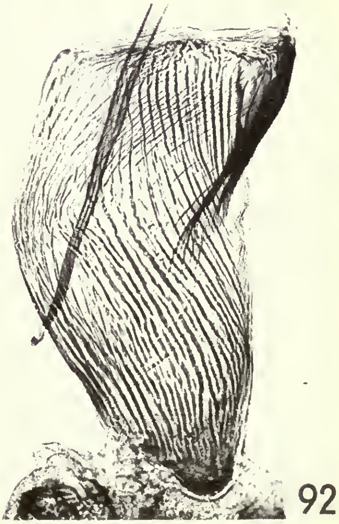
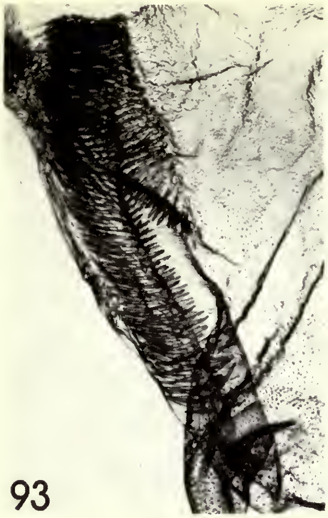

92

PLATE 14

FIG. 93. *Etiella scitivittalis* Walker, signum in bursa.
FIG. 94. *E. chrysoporella* Meyrick, signum in bursa.
FIG. 95. *E. grisea grisea* Hampson, signum in bursa.
FIG. 96. *E. hobsoni* Butler, Formosa, signum in bursa.
FIG. 97. *E. hobsoni* Butler, Australia, signum in bursa.
FIG. 98. *E. hobsoni* Butler, Solomons, signum in bursa.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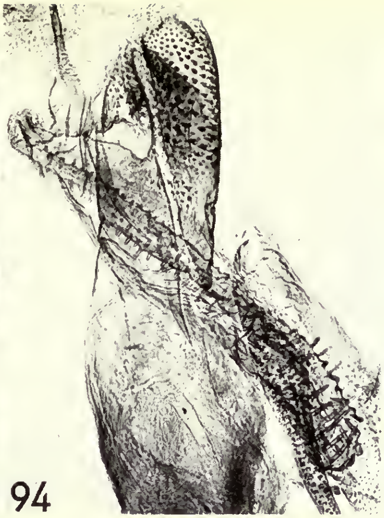
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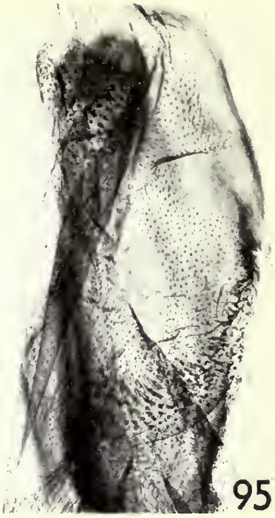
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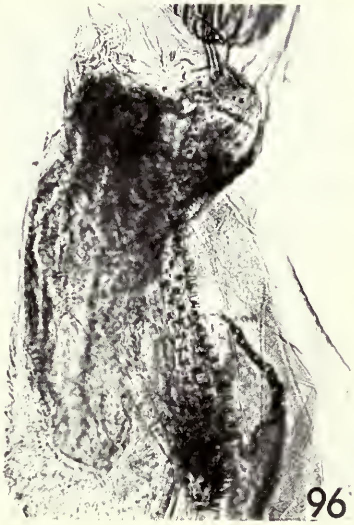
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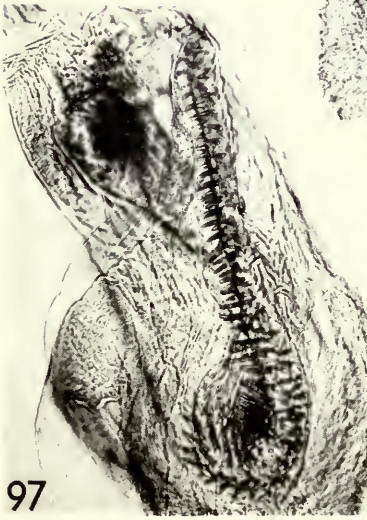
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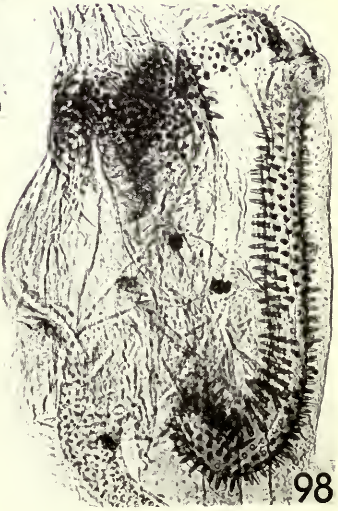
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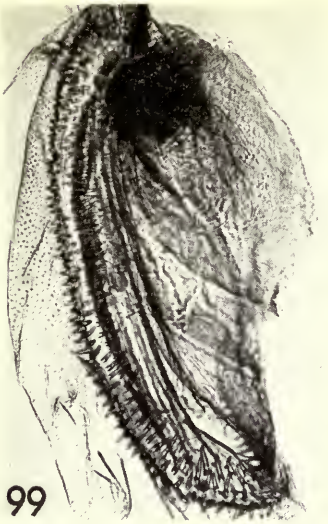
PLATE 15

Fig. 99. *Etiella walsinghamella* Ragonot, Australia, signum in bursa.
Fig. 100. *E. walsinghamella* Ragonot, Papua, signum in bursa.
Fig. 101. *E. walsinghamella* Ragonot, Japan, signum in bursa.
Fig. 102. *E. zinckenella* Treitschke, Europe, lectotype, signum in bursa.
Fig. 103. *E. behrii* Zeller, Australia, lectotype, signum in bursa.



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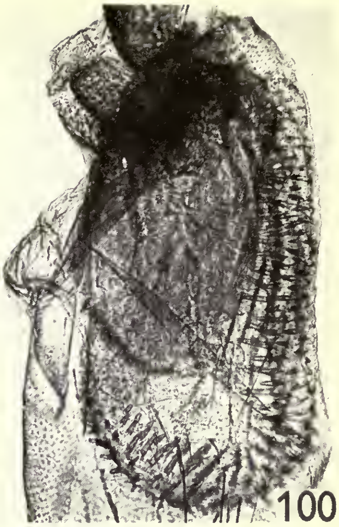

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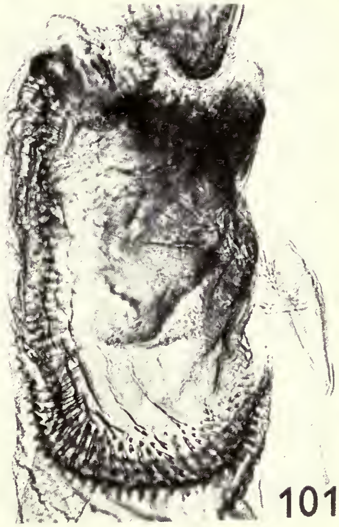

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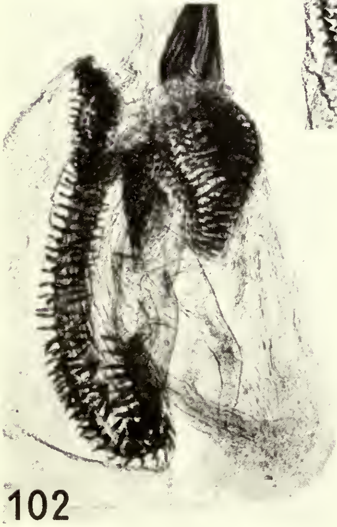

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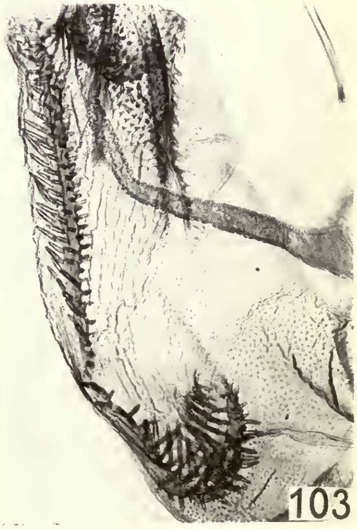

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NATURAL HISTORY

G. B. BUCKTON'S WORKS ON APHIDOIDEA (HEMIPTERA)

J. P. DONCASTER

BULLETIN OF
THE BRITISH MUSEUM (NATURAL HISTORY)
ENTOMOLOGY Vol. 28 No. 2
LONDON: 1973

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NATURAL HIST

G. B. BUCKTON'S WORKS ON APHIDOIDEA (HEMIPTERA)

BY

JOHN PRIESTMAN DONCASTER

Pp. 23–109; 6 *Plates*, 54 *Text-figures*

BULLETIN OF
THE BRITISH MUSEUM (NATURAL HISTORY)
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G. B. BUCKTON'S WORKS ON APHIDOIDEA (HEMIPTERA)

By J. P. DONCASTER

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SYNOPSIS

G. B. Buckton's slide collection, original drawings and notes are used to revise his published work on aphids. Of the 54 aphid species and 2 varieties he described as new, 15 are here accepted as valid, 38 are synonyms (5 newly established) and 3 are *nomina dubia*. Lectotypes have been designated for 51 species and the valid species redescribed and figured.

INTRODUCTION

Some twenty-five years after Francis Walker had laid the foundations for our knowledge of the British aphid fauna, George Bowdler Buckton published his *Monograph of the British Aphides*, which was to remain the standard work on the subject for the next forty years. Its four volumes, produced by the Ray Society in 1876, 1879, 1881 and 1883, contain descriptions of some 170 British aphids, each illustrated in colour, together with a conspectus of contemporary knowledge of the Aphidoidea as a whole. After Buckton's death in 1905 his collection of some 650 balsam mounts of aphids, together with his original drawings for the coloured plates in the monograph and a quantity of manuscript notes were acquired by the Trustees of the British Museum (Natural History). This collection comprises nearly all the material on which Buckton's descriptions of aphids were based and it is my aim here to use it as the means to revise his taxonomic work in the light of present knowledge.

Buckton was a man of varied interests who devoted most of the earlier part of his career to chemistry and physics. It was after he married and moved to Weycombe, near Haslemere, Surrey, about 1865 that he turned his energies fully to the study of natural history, and entomology in particular. (A sympathetic account of his life is given by W. F. Kirby in his obituary of Buckton (Kirby, 1907).) An injury in childhood left him permanently crippled and seriously curtailed his physical activities.

Nevertheless, it seems likely that more than half of the aphids described and figured in his monograph he collected himself in Weycombe and its immediate neighbourhood. Many more were sent to him from other parts of Britain by friends and acquaintances whose help he acknowledges in the text. Foremost among them was Francis Walker from whom he received numerous consignments of aphids as well as many of Walker's own balsam mounts. Other notable contributors included Charles Barrett, who sent aphids from East Anglia and South Wales, James Hardy, who sent others from the Cheviot Hills, Sir John Lubbock, who sent subterranean aphids from Beckenham, Kent, and Professor James Trail, who supplied several species from Aberdeen. Also mentioned in the text or in Buckton's manuscript notes are the following correspondents, with the localities from which they sent material: J. Anderson (Chichester, Sussex), Joseph Anderson (Alresford, Hants), Rev. N. Andrews (Southwater, Sussex), G. C. Bignell (Plymouth), Rev. E. N. Bloomfield (Hastings, Sussex), Mr Borrer (Cowfold, Sussex), Hon. J. T. Boscawen (Probus, Cornwall), Mr Brady (Rainham, Essex), T. Brown (Cambridge), Dr Evershed (Shere, Surrey), E. A. Fitch (Maldon, Essex), Mr Foran (Eastbourne, Sussex), Miss Henry (Lurgashall, Sussex), Mr Knaggs (Kentish Town, London), R. McLachlan (Cornwall), E. Newman (Cambridge), James Salter (Basingstoke, Hants), Miss Salvin (Hawksfold, Sussex), Alfred Smee (Carshalton, Surrey), and Frederick Walker (Abingdon, Berks). Buckton also kept up a lively correspondence with Jules Lichtenstein in Montpellier, from whom he received specimens of some two dozen species of aphids from southern France, including balsam mounts made by Lichtenstein and his friend Richter.

In compiling his monograph, Buckton's aim was to include only those aphids which he could examine and sketch while still alive. His method was first to anaesthetize an aphid, then attach its body to a spot of Canada balsam on a slide, spread and attach legs and wings to adjacent spots of balsam, and draw it in outline with the camera lucida. Then, with water-colour, he would fill in the details of its colour, markings, shadows and highlights so as to portray the insect as nearly as possible as it appeared in life. Finally he would measure the wing-span and lengths of body, antenna and siphunculus before adding more balsam and a coverglass to make a permanent preparation. (Buckton, 1876 : i-iii; 1883 : 190–193.)

All Buckton's slides are balsam mounts, the majority made by himself. His collection also included 69 slides made and labelled by Walker (now incorporated with the Walker Collection in the British Museum (Natural History)), and a few, usually with mica covers, acquired from Lichtenstein. Buckton's own slide labels are sketchy and inadequate, with date, locality and hostplant data often wanting. The paired code letters which are attached to nearly every slide are of little help in this respect and seem to relate only to Buckton's system of slide storage. In a few instances, however, where the same code letters appear on a slide and on an original drawing, they may afford some additional evidence of identification.

The sheets bearing the watercolour sketches, used as models for the 134 plates[1] of aphids in his monograph, have proved of great value in preparing this revision.

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[1] The published plates total 141, of which two are of fossil aphids only, and five are of aphid parasites and predators. Originals of six aphid plates are missing.

Not only are the drawings more accurate, especially in colour characters, than the published lithographs, but the sheets also bear Buckton's own manuscript notes from which his descriptions were compiled, together with records of hostplants, localities, dates, collectors, and other data which often do not appear either on slide labels or in the monograph. Sometimes the pencilled comments, alterations and corrections which he added to these notes have also provided clues to what he was describing. Moreover, his method of working has made it possible, in many cases where data are lacking, to identify his types by comparing his sketches with the mounted aphids. Making allowance for distortion of the specimen from the addition of the coverglass and subsequent shrinkage in balsam, its attitude of body and the positions of the appendages often resemble the sketch so closely that there can be no doubt that one relates to the other. The identity of some of his types has been established by this means alone, and that of many more confirmed by such comparisons. For this reason I have been reluctant in many cases to remount aphids which I believe to be types on account of their similarity in posture to Buckton's sketches. His published measurements, however, are a less reliable check, as Buckton himself points out (1876 : i–ii), 'on account of the unequal foreshortening of the limbs, &c.' when a live insect is measured by means of the camera lucida.

Often the only precise date relating to a specimen is that on the sheet of original sketches, which seems to be the date on which he drew them and not necessarily the date of collection. A date on a slide label, when given, is usually a day or two later than that on the corresponding sketch, a result of his practice of mounting the aphids after he had finished drawing them.

Buckton's monograph represents nearly the whole of his contribution to aphidology. After its publication he described only fifteen further aphid species: eleven from material sent to him from the Indian Region (Buckton, 1889*a*, 1889*b*, 1891*a*, 1891*b*, 1893*a*, 1893*b*, 1893*c*, 1896, 1899*a*, 1899*b*), and four more from Britain (Buckton, 1886, 1901). In all he published 58 species-group names as new, 15 of which are here accepted as valid, 38 are synonyms of other species, three must be regarded as *nomina dubia*, one is a *nomen nudum* and one belongs in the Coccoidea. He also erected nine new genera (excluding those erected for fossil aphids), of which five are currently valid.

Buckton designated no types, but his slides contain specimens of nearly all the species he described, and with the help of his original drawings, manuscript notes and published data it is possible to establish most of his types with reasonable certainty.

Frederick Laing during his curatorship of the aphid collections in the British Museum (Natural History) remounted a number of Buckton's specimens, some of which he marked as types, but he published no type-designations. Theobald also examined many of them and records his opinions in his own work on British aphids (Theobald, 1926, 1927, 1929). Many more of Buckton's specimens have been removed from their original mounts, cleared and remounted in gum-chloral mixture by me for the purposes of the present work.

I have been able to designate lectotypes for all but five of the 54 species and two varieties he described as new (disregarding the coccid) as well as locating many of the specimens on which his other descriptions and figures are based. All the types of

Buckton's British aphid species are in the British Museum (Natural History), London. Of the species he described from the Indian Region, the types of *Pemphigus aedificator* and *Therioaphis maculata* are held by the Zoological Survey of India, Calcutta; and others are in London, except that of *Pyrolachnus pyri*, the location of which is unknown to me.

In the following revision, names used for the current identifications (given in bold type) of Buckton's British species conform as far as possible with those in Kloet & Hincks, *A Check List of British Insects*, 2nd Edition, Part I, 1964.

Numbers in italics refer to slides in the Buckton Collection in the British Museum (Natural History), hereafter abbreviated to BMNH.

'*W.*' preceding a slide number indicates a Walkerian slide originally in the Buckton Collection.

An asterisk (*) following a slide number indicates that the specimen(s) have been remounted.

ACKNOWLEDGEMENTS

I wish to express my thanks to the many colleagues who have so generously given me material, information, advice and encouragement in the preparation of this revision, notably Mr D. Hille Ris Lambers, Dr F. Leclant, Dr M. D. Leonard, Dr M. Miyazaki, Dr J. Pettersson, Professor A. G. Robinson and Mr H. L. G. Stroyan. I am especially grateful to the Director of the Zoological Survey of India, Calcutta, for lending me type-material of *maculata* Buckton, to Dr C. I. Carter for identifying many of Buckton's adelgids, and to Dr V. F. Eastop for much practical help. I am indebted to Mrs J. M. Palmer for her technical assistance and to Mr J. V. Brown for the photographs.

LIST OF BUCKTONIAN SPECIES

Those with lectotypes are marked with an asterisk (*).

1. Valid Species

**ampullata, Amphorophora*
**artemisiae, Cryptosiphum*
**aucupariae, Dysaphis* (*Pomaphis*)
**bambusae, Astegopteryx*
**carnosum, Microlophium*
**circumflexum, Aulacorthum* (*Neomyzus*)
**crithmi, Dysaphis*
**cupressi, Cinara*
**immunis, Pemphigus*
**luteum, Macrosiphum* (*Sitobion*)
**muralis, Dactynotus*
**napaeus, Pemphigus*
**pilosum, Pterocomma*
pyri, Pyrolachnus
**viciae, Megoura*

2. Synonyms

**acetosae, Aphis* = *Aphis acetosae* L.
**aedificator, Pemphigus* = *Baizongia pistaciae* (L.)
**atratus, Chermes* = *Adelges laricis* Vallot
**bellis, Aphis* = *Brachycaudus helichrysi* (Kaltenbach)
**betulae, Chaitophorus* = *Callipterinella calliptera* (Hartig)
**betulina, Thelaxes* = *Glyphina betulae* (L.)
**carnosa, Endeis* = *Geoica eragrostidis* (Passerini)
**castaneae, Callipterus* = *Myzocallis castanicola* Baker
**cucurbitae, Aphis* = *Aphis gossypii* Glover
**dilineatus, Hyalopterus* = *Longicaudus trirhodus* (Walker)
edentula, Aphis* (syn. n.**) = *Rhopalosiphum insertum* (Walker)
**fodiens, Schizoneura* = *Schizoneura ulmi* (L.)
**formicina, Endeis* = *Baizongia pistaciae* (L.)
**fuliginosa, Schizoneura* = *Schizolachnus pineti* (F.)
**fuliginosus, Lachnus* = *Tuberolachnus salignus* (Gmelin)
var. *glauca, Siphonophora rosae* = *Macrosiphum rosae* (L.)
**gracilis, Myzus* = *Metopolophium dirhodum* (Walker)
**graminis, Rhizobius* = *Aploneura lentisci* (Passerini)
instabilis, Aphis* (syn. n.**) = *Brachycaudus cardui* (L.)
lentiginis, Aphis* (syn. n.**) = *Dysaphis* (*Pomaphis*) *plantaginea* (Passerini)
**longipennis, Siphonophora* = *Metopolophium dirhodum* (Walker)
**macrocephalus, Lachnus* = *Cinara pinicola* (Kaltenbach)
**maculatus, Chaitophorus* = *Therioaphis trifolii* (Monell)
**melanocephalus, Hyalopterus* = *Hayhurstia cucubali* (Passerini)
**menthae, Siphonophora* = *Aulacorthum solani* (Kaltenbach)
**olivata, Siphonophora* = *Dactynotus cirsii* (L.)
**opima, Aphis* = *Brachycaudus cardui* (L.)
**pedicularis, Aphis* = *Aphis nasturtii* Kaltenbach
**pellucida, Endeis* = *Geoica eragrostidis* (Passerini)
penicillata, Aphis* (syn. n.**) = *Aphis grossulariae* Kaltenbach
**petasitidis, Aphis* = *Brachycaudus helichrysi* (Kaltenbach)
**pilosa, Glyphina* = *Schizolachnus pineti* (F.)
**polygoni, Siphonophora* = *Nasonovia ribisnigri* (Mosley)
*var. *rufa, Siphonophora rubi* = *Macrosiphum funestum* (Macchiati)
scrophulariae, Siphonophora* (syn. n.**) = *Cryptomyzus galeopsidis* (Kaltenbach)
**sisymbrii, Siphonophora* = *Dactynotus cichorii* (Koch)
**theaecola, Ceylonia* = *Toxoptera aurantii* (Boyer de Fonscolombe)
**viridana, Forda* = *Forda formicaria* Heyden

3. *Nomina dubia*

coccus, Pemphigus
formicophilus, Lachnus
taxi, Chermes

4. *Nomen nudum*

cinchonae, Pemphigus

5. Non-aphid

jujubae, Rhizobius: in Coccoidea, Margarodidae

LIST OF BUCKTONIAN GENERA

(Fossil aphids excluded)

Amphorophora, 1876 : 187; type-species *A. ampullata* Buckton, 1876.
Brachycolus, 1879 : 146; type-species *Aphis stellariae* Hardy, 1850.
Ceylonia, 1891*a* : 34; type-species *C. theaecola* Buckton, 1891 (= *Aphis aurantii* Boyer de Fonscolombe, 1841.)
Cryptosiphum, 1879 : 144; type-species *C. artemisiae* Buckton, 1879.
Megoura, 1876 : 188; type-species *M. viciae* Buckton, 1876.
Melanoxanthus, 1879 : 21; type-species *Aphis salicis* Linnaeus, 1758.
Oregma, 1893*b* : 87; type-species *O. bambusae* Buckton, 1893.
Pterocomma, 1879 : 142; type-species *P. pilosum* Buckton, 1879.
Ptychodes, 1881 : 39; type-species *Aphis juglandis* Goeze, 1778.

Ceylonia is a synonym of *Toxoptera* Koch, *Melanoxanthus* of *Pterocomma* Buckton, *Oregma* of *Astegopteryx* Karsch, and *Ptychodes* of *Callaphis* Walker.

BUCKTON'S APHID SPECIES

Aphis acetosae Buckton = ***Aphis acetosae*** Linnaeus

Aphis acetosae Linnaeus, 1767 : 734.
Aphis acetosae Linnaeus; Fabricius, 1775 : 739.
Aphis acetosae Buckton, 1879 : 80; pl. 62, figs 5, 6, 7. [Synonymized by Börner, 1952 : 77.]

LECTOTYPE here designated: alate viviparous female. Locality not stated. *Rumex acetosa*. 26.vi.(year ?). (*Buckton* ?). (*426a**).

Paralectotypes. 2 apterous viviparous females, 5 alate viviparous females, 6 nymphs. Data as lectotype. (*426**, *426a**, *426b**, *426c**).

BIOMETRIC DATA. Lectotype, alata: body length 2·30 mm, antennal flagellum 1·36 mm, ratios of segments III–VI 45 : 25 : 22 : 14 + 35, siphunculus 0·30 mm, cauda 0·16 mm, caudal hairs 15, ultimate rostral segment 0·138 mm, second segment of hind tarsus 0·138 mm, hairs on eighth tergite 7, articular diameter of antennal segment III 31µ, longest hair on ant. seg. III 12µ, on hind femur 35µ, on hind tibia 38µ, on abdominal tergite III 10µ, on abd. terg. VIII 18µ, secondary rhinaria on ant. seg. III 7 and 8.

Paralectotype, aptera: body length 2·64 mm, ant. flag. 1·27 mm, ratios of segs III–VI 37 : 23 : 21 : 14 + 32, siph. 0·39 mm, cauda 0·22 mm, caudal hairs 13, ult. rost. seg. 0·146 mm, second seg. hind tarsus 0·139 mm, hairs on eighth tergite 5, artic. diam. ant. seg. III 32µ, longest hair on ant. seg. III 12µ, on hind femur 25µ, on hind tibia 30µ, on eighth tergite 20µ.

Buckton describes this species as new and figures the apterous and alate viviparous females and the nymph from specimens taken, according to his published account, on *Rumex acetosa*. The manuscript notes accompanying his original sketches for the figures indicate, however, that the aptera he used for figure 5 was taken on thistle, and only the nymph and alata are assigned to *Rumex acetosa*. There are no slides in the Buckton Collection named *acetosae*, but one, labelled in Buckton's hand '*A. rumicis* on Sorrel', contained the specimens listed above, all of which belong in the *Aphis acetosae* L. species-complex and include, I believe, the types of at least the alata and nymph which Buckton describes and figures. I have not found a specimen which I can identify with the sketch of the aptera said to have been taken on thistle.

Stroyan (1955 : 309 and 1957*b* : 354) discusses and compares two forms of *Aphis acetosae* L. which occur on *Rumex acetosa* and *R. acetosella* in Britain. Comparison of Buckton's material with Stroyan's shows a close similarity between both Buckton's apterae and alatae and the form associated with *R. acetosa*, which is characterized by a nearly solid black dorsal abdominal patch in apterae and transverse segmental dark bands on the abdominal dorsum in alatae. Indeed, the only considerable difference is in the lengths of the hairs on body and appendages, which in Buckton's specimens are on average about half as long as those of Stroyan's, in this respect, as also in having tibial hairs which are longer on the inner side than on the outer, resembling more closely the short haired form on *R. acetosella*.

Through the kindness of Dr Jan Pettersson of Uppsala I was also able to examine apterae of another form of *Aphis acetosae*, collected on *Rumex crispus* in Sweden by Dr F. Ossiannilsson, which showed many similarities with Buckton's specimens. In this case, however, the most obvious agreement was in the shortness of the hairs on body and appendages which came very close to those of Buckton's specimens. The aphids from *R. crispus* all had the nearly complete sclerotic tergal patch but were smaller in size than either Buckton's or Stroyan's. Buckton's sample, however, is too small to allow clear distinctions to be drawn from such comparisons and for the present I regard his species as one member of the *Aphis acetosae* L. species-complex.

Pemphigus aedificator Buckton = ***Baizongia pistaciae*** (L.)

Aphis pistaciae Linnaeus, 1767 : 737.
Aphis pistaciae Fabricius, 1775 : 739.
Baizongia pistaciae (F.) Rondani, 1848 : 35.
Pemphigus cornicularius Passerini, 1856 : 261.
Endeis formicina Buckton, 1883 : 91.
Pemphigus aedificator Buckton, 1893*a* : 71.
Pemphigella cornicularia (Passerini) Tullgren, 1909 : 171.
?*Neorhizobius stramineus* del Guercio, 1917 : 249.
Pemphigus pistaciae (L.) Wilson & Vickery, 1918 : 131.
Dasia aedificator (Buckton) van der Goot in Das, 1918 : 144.
[*Tycheoides setariae* (Passerini) Theobald, 1929 : 183. Misidentification.]
[*Pemphigus aedificator* Buckton; Takahashi, 1933 : 352. Misidentification.]
Baizongia oestlundi Hottes, 1949 : 86.
Baizongia pistaciae (L.) Davatchi, 1958 : 133.

Lectotype (designated by Doncaster, 1969 : 157): alate viviparous female (fundatrigenia migrans). Pakistan, Quetta. *Pistacia terebinthus* (?) galls. 16.xi. 1890 (*Elliot*). (Zoological Survey of India, Calcutta, no. 7282/H7.)

Paralectotypes: 20 alate, 1 apterous viviparous females. Same data as lectotype. (Z.S.I. nos 7283–7383/H7. Slide no. 7286/H7 presented to BMNH).

I have already dealt elsewhere (Doncaster, 1969) with *aedificator* Buckton, including descriptions of lectotype and paralectotype. The name was first synonymized with *Baizongia pistaciae* (L.) by Davatchi (1958 : 133).

Amphorophora ampullata Buckton

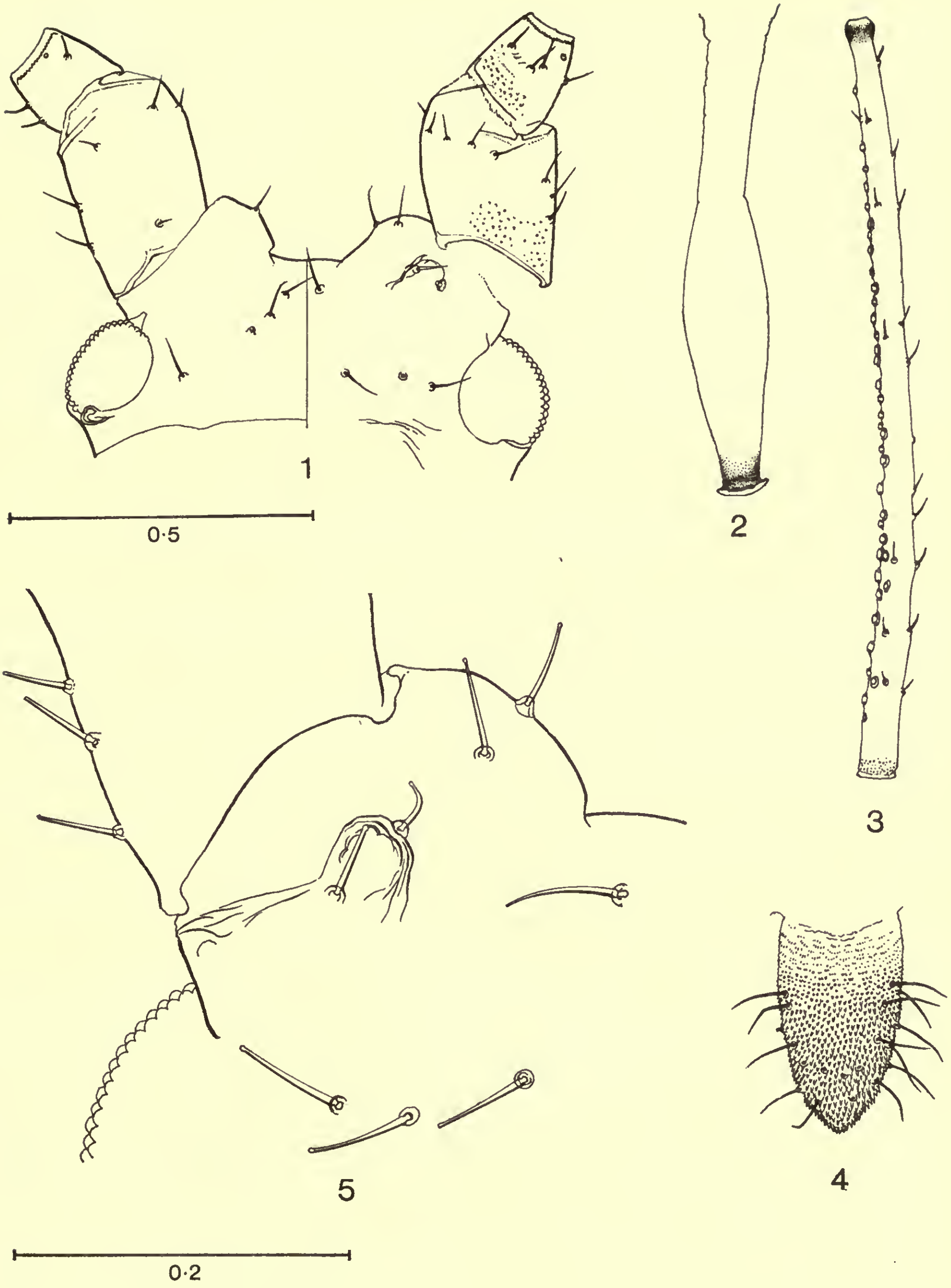
(Pl. 1, fig. 55; Text-figs 1–5)

Amphorophora ampullata Buckton, 1876 : 187; pl. 37, fig. 4.
Rhopalosiphum ampullatum (Buckton) Oestlund, 1887 : 77.
Rhopalosiphum ampullatum (Buckton); van der Goot, 1915 : 142.
Megoura dryopteridis Matsumura, 1918 : 13. [Synonymized by Miyazaki, 1968 : 14.]
Acyrthosiphon (*Amphorophora*) *ampullatum* (Buckton) Mordvilko, 1919 : 247.
Amphorophora ampullata Buckton; Mason, 1925 : 10.
Amphorophora ampullata Buckton; Theobald, 1926 : 191.
Amphorophora shidae Shinji, 1933 : 348. [Synonymized by Miyazaki, 1968 : 14.]
Amphorophora ampullata Buckton; Knechtel & Manolache, 1945 ; 484.
Amphorophora ampullata Buckton; Hille Ris Lambers, 1947 : 231.
Amphorophora dryopteridis (Matsumura) Moritsu, 1948 : 83.
Amphorophora ampullata Buckton; Börner, 1952 : 175.
Amphorophora dryopteridis (Matsumura); Paik, 1965 : 73.
Amphorophora ampullata Buckton; Hille Ris Lambers & Basu, 1966 : 14, 15.
Amphorophora ampullata Buckton; Robinson, 1966 : 1253.
Amphorophora ampullata Buckton; Miyazaki, 1968 : 14–17.
Amphorophora ampullata Buckton; Heie, 1969 : 383. [New host record.]

LECTOTYPE here designated: apterous viviparous female. Sussex, Lurgashall. *Cystopteris montana* in greenhouse. 13.ix.(year ?). (Miss *Henry*). (*37**).

Paralectotypes: 2 apterous viviparous females. Data as lectotype. (*37a**, *38**.)

Apterous viviparous female. (Plate 1, fig. 55; Text-figs 1–5). *Colour* of macerated specimen: uniformly pale yellowish, except for slight darkening at articulation of antennal segments III and IV, and IV and V; at apices of fore and middle tibiae, and apices of siphunculi. *Morphology:* body large, broadly oval, 3·28–4·05 mm long. Head smooth, dorsal hairs 52–80μ long, with blunt apices. Antennal tubercles large, diverging, each ventrally with a prominent hemispherical protuberance bearing one or two hairs. First antennal segment with 9–10 hairs, some spinules on the ventral surface near the base, and some imbrications on the inner surface near the apex. Second segment partly spinulose. Third segment spinulose at the base, remainder smooth, with from 26–39 secondary rhinaria, more or less in line, over nearly its whole length; hairs short, stout, blunt, up to 36μ long. Fourth and fifth segments faintly imbricated, sixth with processus terminalis 4·8 times as long as base (in the only specimen with a complete antenna). Rostrum scarcely reaching hind coxae, ultimate segment rather broad with straight sides tapering towards a blunt apex, 0·160–0·174 mm long, about equal in length to second segment of hind tarsus, and with 10–12 non-apical hairs. Femora and tibiae slightly scabrous apically, otherwise smooth. Femoral hairs stout, blunt, the longest reaching about 60μ. Tibial hairs more acute, more numerous, the longest about 70μ. First segments of tarsi on all legs with 3 hairs. Tergum



FIGS 1–5. *Amphorophora ampullata* Buckton. Lectotype: Fig. 1. Head, upper (left) and lower surfaces. Fig. 2. Siphunculus. Fig. 3. Third antennal segment. Fig. 4. Cauda. Paratype (*37a*): Fig. 5. Underside of left antennal tubercle to show protuberance (see text). (Figs 1–4 to same scale.)

smooth, membranous, sparsely clothed with thick blunt hairs, only about 15–20μ long on anterior tergites, longer on sixth, seventh and eighth. Eighth tergite with 6–8 hairs, the longest about 70μ. Hairs on sternites rather long (±70μ), fine, acute, rather numerous. Siphunculi smooth, except for a few apical striae below the flange, base expanded, basal two-fifths narrow, apical three-fifths evenly swollen, the diameter at the widest part about twice that at the narrowest, 2·3 times as long as the cauda and a little less than a quarter of the body length. Cauda obtuse, 1·7–2 times as long as its basal width, with 18–19 hairs. Subgenital plate with 4 hairs near anterior margin and 10–12 posteriorly.

NOTES. *Amphorophora ampullata* Buckton *sensu latiore* has been recorded from western and northern Europe, India, Korea, Japan, and North America. Its food-plants are restricted to ferns, the commonest being species of *Athyrium* and *Dryopteris* in the Old World, and of *Onoclea* in North America.

Hille Ris Lambers and Basu (1966 : 14, 15) distinguish two subspecies of *ampullata*: *bengalensis*, based on material from ferns in India, and *laingi* Mason, 1925, from *Onoclea sensibilis*, etc., in the U.S.A.

Cryptosiphum artemisiae Buckton

(Pl. 1, fig. 56; Text-figs 6–8)

Aphis gallarum Kaltenbach, 1856 : 236. [Homonym of *Aphis gallarum* Gmelin, 1790 : 2210.]
Aphis artemisiae Passerini, 1860 : 35. [Homonym of *Aphis artemisiae* Boyer de Fonscolombe, 1841 : 162.]
Cryptosiphum artemisiae Buckton, 1879 : 145; pl. 84, figs 1–4.
Pseudolachnus yomogi Shinji, 1922 : 730. [Synonymized by Monzen, 1929 : 48; Takahashi, 1931 : 37, Shinji, 1941 : 623.]
Cryptosiphum pseudogallarum Shinji, 1941 : 626–628. [Synonymized by Tao, 1962 : 96.]

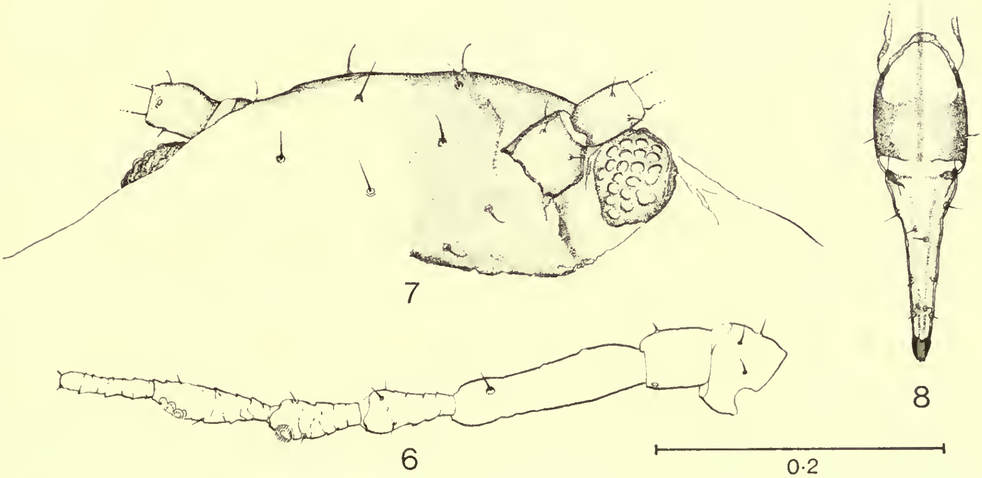
LECTOTYPE here designated: apterous viviparous female. Norfolk, Norwich, Brandon. *Artemisia vulgaris* (galls). 2.viii.(year ?). (*Barrett*). (*42**).

Paralectotypes: 4 apterous viviparous females, 1 nymph, 5 alate viviparous females, same data as lectotype. (*41**, *42a**, *42b**, *43**).

Apterous viviparous female. (Plate 1, fig. 56; Text-figs 6–8). *Colour* of macerated specimen: body pale brown; head, antennae, rostrum, subgenital and anal plates rather darker; legs and cauda darker still. *Morphology:* body 1·31–1·66 mm long, broadly oval, about 1·25 times as long as wide. Head short, broad, smooth, frons slightly convex, antennal tubercles absent. Compound eyes rather small, triommatidia scarcely projecting. Cephalic hairs sparse, fine, acute, from 22–32μ long. Antennae short, about 0·25 of the length of the body, of 6 segments, the length ratios of III–VI about 13 : 6 : 6 : 7 + 6. Antennal hairs sparse, acute, up to about 12μ long. Primary rhinaria, and the 5–6 accessories around that on VI, heavily fringed. Segments I–III smooth, IV–VI imbricated. Rostrum reaching to or a little beyond second coxae, ultimate segment stiletto-shaped with narrow elongate apex, 0·119–0·134 mm long, about 2·5 times as long as its basal width and from 1·2 to 1·4 times as long as hind tarsus II (0·095 mm). Two of the three normal pairs of apical rostral hairs are set at about one-sixth of its length from the apex, the third pair are displaced almost to the middle of the segment. There are 6 non-apical hairs in the lectotype, 4 or 5 in paratype apterae. Legs short; the femora, which are fused to the trochanters, stout, nearly smooth, but middle and hind femora with a few short rows of spinules on the under surface; femoral hairs sparse, fine, acute, from 20–24μ long. Tibial hairs more numerous, some on inner side stouter and spiny, the rest fine, acute, 24–32μ long. Hind tibia about 0·2 of body length. First tarsal chaetotaxy 3, 3, 2. Tergum smooth, with few rather long (32–38μ) fine hairs. Siphunculi very small, the opening, scarcely larger than a spiracle, borne on a shallow protuberance. Cauda very short, broad, slightly convex, conforming to the oval outline of the body, with 5 or 6 hairs. Eighth tergite with 6–8 hairs 40–48μ long. Ventral hairs shorter and more numerous, sternites with irregular transverse rows of spinules. Subgenital plate transversely elongate with 5–10 hairs on anterior half and 13–16 along posterior border.

Alate viviparous female (*43**). *Colour:* body pale brown, head, thorax, antennae and legs slightly and evenly darker. Differs from aptera mainly in the narrower and slightly shorter body and relatively longer appendages. The antennae are just over half, and the hind tibiae about one-third of the body length respectively. Antennal segments III–VI are imbricated, and III bears 26–30 circular or oval, rather large secondary rhinaria with wide rims, irregularly arranged over the distal three-quarters of the segment; IV with 2–5 similar rhinaria grouped closely near its apex. Segment III joined to II by a narrow stalk, about half the diameter of the rest of the segment. Wing venation normal aphidine, but in this specimen the media in one fore wing has both its branches forked, an abnormality which Buckton records both in his original sketch of the alate *artemisiae* and in the published figure (plate 84, fig. 3).

NOTES. Buckton's sample of *Cryptosiphum artemisiae* includes one alate viviparous female of *Coloradoa artemisiae* (del Guercio), the presence of which could account for the statement in his generic diagnosis of *Cryptosiphum* (1879 : 144), 'Cauda small, but distinctly seen in the winged forms', and his doubt, expressed two pages later, whether Passerini's *artemisiae* is the same insect. The originals for his published plate include drawings of both species. The coloured drawings of aptera, nymph and alata used for figs 1, 2 and 3 are definitely based on *artemisiae* Buckton, but the end of an abdomen used for fig. 5 shows a prominent cauda and—in the original but not the reproduction—a distinct siphunculus. This, and the head, antenna and rostrum of fig. 6 would seem to have been taken from the alate *Coloradoa*. An unpublished sketch of head and antenna clearly belongs to an alate *Cryptosiphum*.



FIGS 6–8. *Cryptosiphum artemisiae* Buckton. Lectotype: Fig. 6. Left antenna. Paratype (*42a*): Fig. 7. Head, upper (left) and lower surfaces. Fig. 8. Apex of rostrum.

The sheet of originals is dated August 2nd. If, as I suspect, this is the date when Buckton drew them, the specimens must have been collected some days earlier, i.e. in late July, not 'early August' as published.

Chermes atratus Buckton = ***Adelges laricis*** Vallot

Adelges laricis Vallot, 1836 : 72.
Chermes coccineus Ratzeburg, 1843 : 202.
Chermes strobilobius Kaltenbach, 1843 : 203.
Chermes atratus Buckton, 1883 : 39; pl. 120, figs 5, 6.
(For full synonymy, see Carter, 1971 : 44.)

LECTOTYPE here designated: alate viviparous female. Surrey, Haslemere. *Quercus* sp. 2.vi.1871 (?). (*Buckton*). (*159*).

Buckton describes only the alata which he took as a vagrant on oak. There are no specimens named *atratus* in his collection, but his notes indicate that the alata was collected together with specimens of *Thelaxes dryophila*. An alate *Adelges laricis* Vallot, mounted on *159* together with apterous and alate *dryophila*, agrees reasonably well with Buckton's description, measurements and original drawing, and this I take to be his type of *atratus*.

Aphis aucupariae Buckton = ***Dysaphis (Pomaphis) aucupariae*** (Buckton)

(Pl. 2, fig. 57; Text-figs 9–13)

[*Aphis sorbi* Kaltenbach; Walker, 1850 : 276 *partim*. Misidentification.]
Aphis aucupariae Buckton, 1879 : 76; pl. 60, figs 3–5.
Anuraphis appelii Börner, 1926 : 225.
Anuraphis aucupariae (Buckton) Theobald, 1927 : 308.
Aphis (*Dentatus?*) *aucupariae* Buckton; Mordvilko, 1929 : 52.
Yezabura (*Ceruraphis*) *aucupariae* (Buckton) Börner & Schilder, 1932 : 586.
Sappaphis aucupariae (Buckton) Börner, 1952 : 97.
Sappaphis aucupariae (Buckton); Stroyan, 1957*a* : 20.
Dysaphis (*Pomaphis*) *aucupariae* (Buckton) Stroyan, 1963 : 55.
Dysaphis aucupariae (Buckton); Shaposhnikov, 1964 : 582.

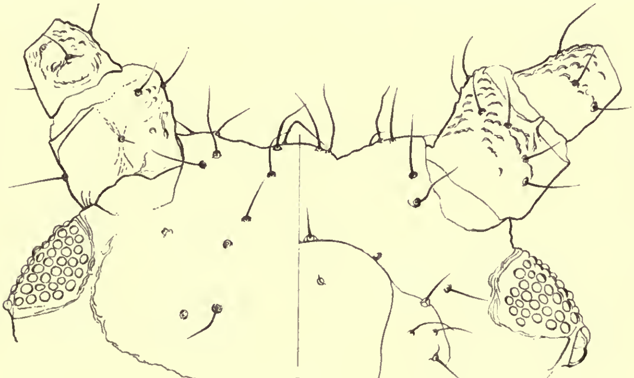
LECTOTYPE here designated: apterous viviparous female (fundatrigenia). Sussex, Horsham, Cowfold. *Sorbus torminalis*. 17.vi.(year ?). (Probably *Borrer*). (*466a**).

Paralectotypes: 7 nymphs, data as lectotype (*466b**, *466c**); 6 larvae, Sussex, Horsham. *Sorbus torminalis*. 18.v.(year ?). (Probably *Borrer*). (*49**, *49a**, *49b**).

Other material: 3 alate viviparous females, 4 nymphs. Middlesex, Southgate. *Sorbus torminalis*. 21.vi.1847. (*Walker*). (*W. 939*).

Apterous viviparous female (*fundatrigenia*). (Plate 2, fig. 57; Text-figs 9–13). *Colour* of macerated specimen: head, antennae except basal part of segment III, legs except femoral bases, and siphunculi dark to black sclerotic. Sclerotic bands on notum, dorsal sclerites on abdomen, anal and subgenital plates also dark. *Morphology:* body 2·47 mm long, broadly oval, about 1·4 times as long as broad. Head densely sclerotic, vertex without spinal tubercles, wrinkled, with some scattered spinules, hairs fairly numerous, fine, acute, up to about 60μ long. Antennae with all six segments rather coarsely imbricated; hairs acute, the longest on III reaching 38μ, slightly longer than articular diameter of segment; processus terminalis 2·6 times as long as base of VI; the flagellum 1·58 mm long, about two-thirds the length of the body; ratios of segments III–VI 48 : 34 : 25 : 14 + 36. Rostrum 0·53 mm long, reaching middle coxae, ultimate segment normal, 0·148 mm long, about twice as long as its basal width, with 4 non-apical hairs, and very slightly shorter than second segment of hind tarsus (0·154 mm). Femora rough and more or less scabrous, mainly on posterior surface, hairs fairly numerous, fine, acute, up to 64μ long. Tibial hairs shorter and stouter, up to 50μ long; hind tibia about half length of body. First tarsal segments with 3, 3, 3 hairs. Abdomen with marginal tubercles on segments II–IV on left side, I–IV on right. Spinal sclerites are present as irregular broken transverse bands on segments I, VII and VIII, and as irregular paired scleroites on the intervening segments. One pair only of spinal tubercles is present on segment VIII. Dorsal abdominal hairs are acute, the longest reaching 78–80μ. Eighth tergite with 5 hairs. Siphunculi 0·33 mm long, nearly straight, slightly and evenly tapering from base to apex, imbricated, with a slight annular constriction behind the flange, each 3·3 times as long as its basal width, nearly equal in length to antennal segment IV and just over one-eighth of the body length. Cauda bluntly triangular, 0·12 mm long, about two-thirds as long as its basal width, with 7 hairs. Subgenital plate with 3 hairs on anterior half and 19 irregularly arranged along posterior margin.

NOTES. From Buckton's notes and drawings I conclude that his published description of *aucupariae* is based on two samples of material, namely (a) six larvae taken probably at Cowfold, near Horsham, Sussex and dated 18th May, and (b)



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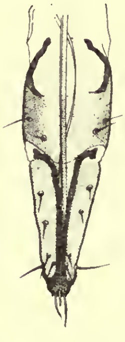

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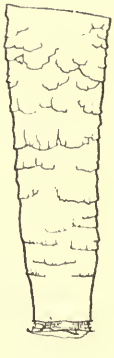

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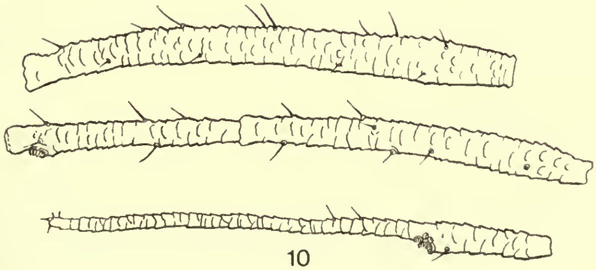

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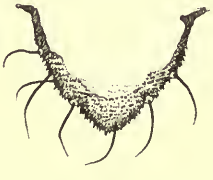

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FIGS 9–13. *Dysaphis* (*Pomaphis*) *aucupariae* (Buckton). Lectotype: Fig. 9. Head, upper (left) and lower surfaces. Fig. 10. Left antenna. Fig. 11. Apex of rostrum. Fig. 12. Siphunculus. Fig. 13. Cauda.

one adult fundatrigenia and seven nymphs taken at Cowfold and dated 17th June. His published account confirms that both larvae and nymphs were found in the same place. Both samples are from *Sorbus torminalis;* the first (a) was originally mounted on one slide (*49*) labelled '*Aphis aucuparia*' by Buckton, but with no other data, and (b) on *466* labelled '*A. sorbi.* Cowfold.' He drew the largest of the larvae in (a) for figure 3, which he regarded as the normal apterous female and described: description and measurements as well as the sketch correspond fairly well with the specimen. The adult fundatrigenia in sample (b) was his model for figure 4, the 'globose' form, which he thought might be the fundatrix. Measurements given in his notes, but not published, support this conclusion. Since the fundatrigenia is the only adult morph in either sample, and is also complete and well preserved, I choose it as lectotype of *aucupariae* Buckton.

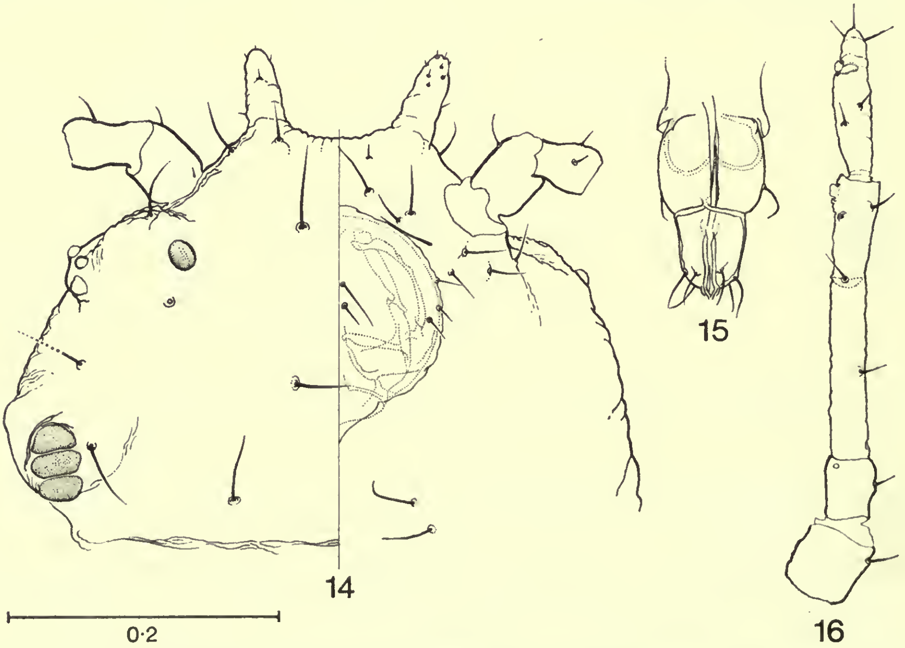
A full account of *aucupariae* (Buckton) is given by Stroyan (1957*a* : 20–22).

Oregma bambusae Buckton = ***Astegopteryx bambusae*** (Buckton)

(Pl. 2, fig. 58; Text-figs 14–16)

Oregma bambusae Buckton, 1893*b* : 87, partim.
Oregma lutescens van der Goot, 1917 : 197.
Astegopteryx bambusae (Buckton) Doncaster, 1966 : 157.

Lectotype (designated by Doncaster, 1966 : 157): apterous viviparous female.



Figs 14–16. *Astegopteryx bambusae* (Buckton). Paratype 3: Fig. 14. Head, upper (left) and lower surfaces (wax glands shown stippled). Paratype 26: Fig. 15. Rostrum. Lectotype: Fig. 16. Left antenna.

INDIA, Uttar Pradesh, Dehra Dun. *Bambusa arundinacea*. Undated. (*Cotes*). (*53a**).

Paralectotypes: 23 apterous viv. females, 1 normal larva, 1 dimorphic larva. Data as lectotype. (*52*, 53*, 53a*, 54*, 55*, 56*, 532**). (Plate 2, fig. 58; Text-figs 14–16.)

The material on which Buckton bases *Oregma bambusae* is a mixture of two species, *Astegopteryx bambusae* (Buckton) and *Pseudoregma bambusicola* (Takahashi) (see Doncaster, 1966). All the material of true *bambusae* is in the Buckton Collection, BMNH.

Aphis bellis Buckton = ***Brachycaudus helichrysi*** (Kaltenbach)

Buckton, 1879 : 98; pl. 69 bis, figs 1, 2, 4.

LECTOTYPE here designated: apterous viviparous female. SCOTLAND, Aberdeen. *Bellis perennis*. 18.ix.(year ?). (*Trail*). (*58*).

Paralectotypes: 2 alate viviparous females, 2 nymphs. Data as lectotype. (*58*).

BIOMETRIC DATA. Lectotype, apterous viviparous female: body length 1·49 mm, antennal flagellum 0·64 mm, ratios of segments III–VI 24 : 15 : 9 : 8 + 24, siphunculus 0·11 mm, cauda 0·069 mm, caudal hairs ?, ultimate rostral segment 0·104 mm, second segment of hind tarsus 0·089 mm, eighth tergite with 7 hairs, articular diameter of ant. seg. III 20μ, longest hair on ant. seg. III 10μ, on hind femur 18μ, on hind tibia 24μ, on abd. terg. VIII 80μ.

Paralectotype, alata: body length 1·84 mm, ant. flag. 0·94 mm, ratios of segs III–VI 41 : 22 : 13 : 11 + 31, secondary rhinaria on III 27, on IV 8, on V 0, siph. 0·11 mm, cauda 0·10 mm, caudal hairs 5, ult. rost. seg. 0·12 mm, second seg. hind tarsus 0·10 mm, eighth tergite with 7 hairs, artic. diam. ant. seg. III 18μ, longest hair on ant. seg. III 12μ, on hind femur 20μ, on hind tibia 26μ, on eighth tergite 45μ.

Buckton's slide is in reasonable condition and has not been remounted. Laing has marked it *helichrysi* Kalt. Theobald (1927 : 285) regarded *bellis* as a doubtful synonym of *helichrysi* and subsequent authors have confidently identified it with Kaltenbach's species.

Buckton's original sketches of *bellis* show the aptera and nymph as dull brownish yellow or brown, which is much more characteristic of *helichrysi* than the brilliant yellow or yellow-green used to colour those morphs in the plate (at least in copies I have seen). I can find nothing in the mounted aptera which might be construed as the 'vermiform parasites' shown in both Buckton's original and the published figure.

Chaitophorus betulae Buckton = ***Callipterinella calliptera*** (Hartig)

Aphis calliptera Hartig, 1841 : 369.
Chaitophorus annulatus Koch, 1854 : 7. [Synonymized by van der Goot, 1912 : 278.]
Chaitophorus betulae Buckton, 1879 : 139; pl. 82, figs 1, 2.
[*Myzocallis betulae* (Buckton); Kloet & Hincks, 1945 : 70. Misidentification.]
Calaphis callipterus (Hartig) Börner, 1952 : 58.
Procalaphis callipterus (Hartig) Quednau, 1954 : 23.
Callipterinella calliptera (Hartig) Stroyan *in* Kloet & Hincks, 1964 : 70.

LECTOTYPE here designated: ovipara. Essex, Wanstead. *Betula*. ix. (year?). ('*Wallace*': ? error for *Walker*, who collected in Wanstead). (*61**).

Paralectotypes: 4 larvae. Data as lectotype. (*62*).

BIOMETRIC DATA. Lectotype, ovipara: body length 2·48 mm, antennal flagellum 1·07 mm, ratios of segments III–VI 56 : 30 : 22 : 15 + ?, siphunculus? (incomplete), cauda? (missing), ultimate rostral segment 0·12 mm, second segment of hind tarsus 0·14 mm, eighth tergite with 12 ? hairs, articular diameter of ant. seg. III 35μ, longest hair on ant. seg. III 23μ, on hind femur 80μ, on hind tibia 100μ, on abd. terg. VIII 110μ.

Buckton describes the apterous viviparous female and the ovipara. His description and figure of the aptera seem likely to be based on the largest of the larvae on *62*. Published measurements agree reasonably well with those of this specimen; furthermore, his original sketch, though not the published lithograph, shows larva-like antennae with the third segment indistinctly, or not, divided, and an undifferentiated cauda. His manuscript notes include the comment 'probably this specimen is not quite mature . . .' His description and figure of the ovipara correspond with the ovipara on *61*, which has been remounted by Laing and marked Type. I designate this specimen as lectotype of *betulae* Buckton.

Theobald (1929 : 349–350) quotes Buckton's description and adds his own descriptions of ovipara and male; but his specimens (from *Betula alba*, Boxmoor, Herts, 23.x.1913) are sexuales of *Betulaphis quadrituberculata* (Kaltenbach).

Thelaxes betulina Buckton = ***Glyphina betulae*** (L.)

Aphis betulae Linnaeus, 1758 : 452.
Vacuna betulae Kaltenbach, 1843 : 177.
Aphis impingens Walker, 1852 : 1042.
Thelaxes betulina Buckton, 1886 : 326; pl. 6, figs 1–6.
Glyphina ? betulae (Linnaeus) Börner, 1952 : 181.
Glyphina betulae (Linnaeus); Stroyan *in* Kloet & Hincks, 1964 : 84.

LECTOTYPE here designated: apterous viviparous female. Sussex, Hastings, Guestling. *Betula*. vi. (year ?). (*Bloomfield*). (*72**).

Paralectotypes: 10 apterous, 3 alate viviparous females, 1 nymph, 1 larva. Data as lectotype. (*72*, 73, 74*).

BIOMETRIC DATA. Lectotype, aptera: body length 1·88 mm, antennal flagellum 0·51 mm, ratios of segments III–V 33 : 12 : 16 + 4, siphuncular diameter 44μ, cauda not measurable, caudal hairs 9?, ultimate rostral segment 0·17 mm, second segment of hind tarsus 0·15 mm, eighth tergite with 5 hairs, articular diameter of ant. seg. III 30μ, longest hair on ant. seg. III 45μ, on hind femur 80μ, on hind tibia 60μ, on eighth tergite ±50μ.

Paralectotype alata: body length 1·76 mm, ant. flag. 0·58 mm, ratios segs III–V 39 : 15 : 16 + 3, secondary rhinaria on III 6, on IV 0, siph. diam. 42μ, cauda 0·085 mm, caudal hairs 6, ult. rost. seg. 0·18 mm, second seg. hind tarsus 0·14 mm, eighth tergite with 9 hairs, artic. diam. ant. seg. III 20μ, longest hair on ant. seg. III ±50μ, on hind femur ±50μ, on hind tibia ±70μ, on eighth tergite ±90μ.

Buckton describes the apterous and alate viviparous females and figures two apterae (one 'of a later brood'), a nymph and an alata. I have not succeeded in locating the originals of these figures. (See also *Glyphina betulae*, p. 88.)

Endeis carnosa Buckton = ***Geoica eragrostidis*** (Passerini)

Tychea eragrostidis Passerini, 1860 : 39.
Tychea setariae Passerini, 1860 : 40.
[*Tychea setulosa* Passerini; Buckton, 1883 : 87. Misidentification.]
Endeis pellucida Buckton, 1883 : 91.
Endeis carnosa Buckton, 1883 : 92; pl. 129, figs 5-8.
[*Geoica utricularia* sensu auctt. nec Passerini, 1856 : 260. Misidentifications.]
[*Geoica squamosa* Hart; Theobald, 1929 : 191. Misidentification.]
Geoica discreta Börner, 1952 : 203.

LECTOTYPE here designated: apterous viviparous female. Kent, Beckenham, in ants' nest. ii.1876. (*Lubbock*). (*89**).

BIOMETRIC DATA. Lectotype, aptera: body length 1·78 mm, whole antenna 0·48 mm, ratios of antennal segments I–V 11 : 9 : 17 : 9 : 13, ultimate rostral segment 0·19 mm, second segment of hind tarsus 0·12 mm.

Buckton describes and figures the apterous viviparous female. The drawings of the whole insect (fig. 5) both in the lithograph and in the original are very crude, but the detail drawings of the hind end (fig. 6), and the vertex and antenna (fig. 7), relate without question to a specimen of *Geoica eragrostidis* (Passerini) received with other specimens from Lubbock. In its original mount this specimen was considerably shrunken, and the posterior abdominal segments appeared much as in Buckton's figure 6, with the rectangular anal plate protruding beyond them. In his MS notes and in his published description he interprets the anal plate as the cauda, but the caption to the figure refers to it as the ovipositor. His sketch for fig. 7 shows the flabellate hairs on the vertex, and the 5-jointed antenna in which the length ratios of the segments are about right—i.e. with III the longest—and not as he describes them as being, all 'nearly equal'.

Siphonophora carnosa Buckton = ***Microlophium carnosum*** (Buckton)

(Pl. 3, fig. 59; Text-figs 17–21)

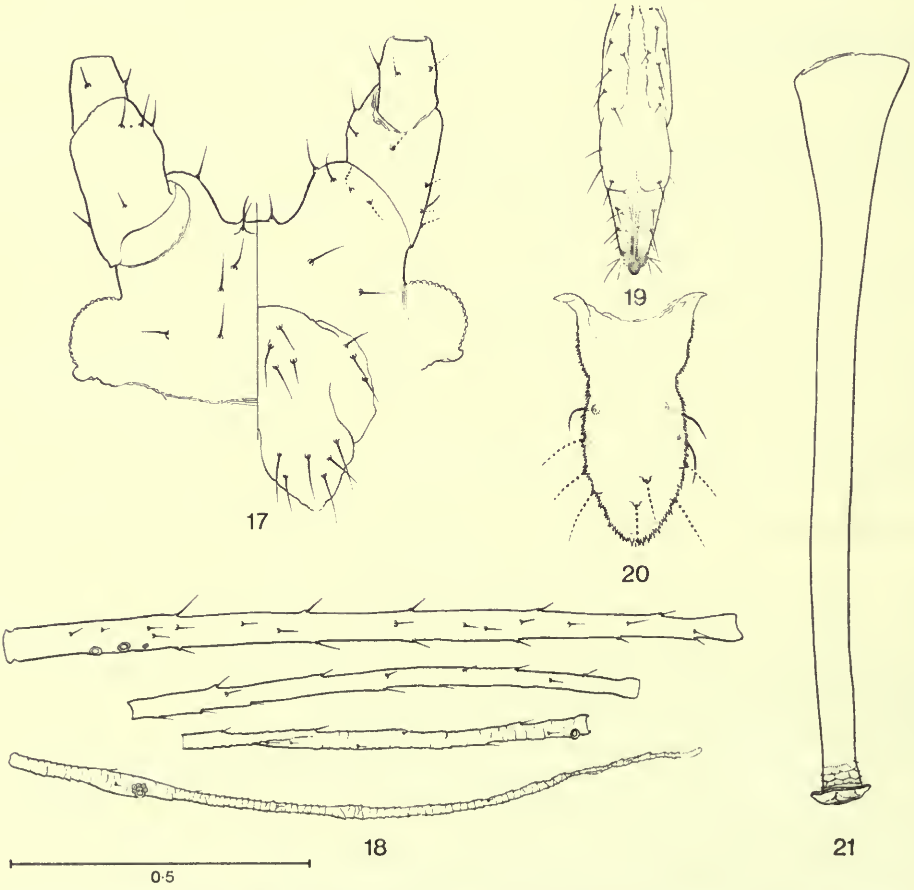
[*Aphis urticae* Linnaeus, 1758 : 453 (=*Orthezia urticae* (L.) in Coccoidea; type in Linnaean Society Collection, London); Schrank, 1801 : 106, Kaltenbach, 1843 : 13. Misidentifications.]
[*Siphonophora urticae* (sensu Schrank non L.) Koch, 1855 : 154.]
[*Siphonophora urticae* (sensu Schrank non L.); Buckton, 1876 : 143.]
Siphonophora carnosa Buckton, 1876 : 144; pl. 20, figs 1–4.
[*Macrosiphum urticae* (sensu Schrank non L.) Schouteden, 1906*a* : 241.]
[*Acyrthosiphon* (*Microlophium*) *urticae urticae* (sensu Schrank non L.) Mordvilko, 1914 : 202.]
Amphorophora evansi Theobald, 1923 : 24; 1926 : 193.
Macrosiphum schranki Theobald, 1927 : 403.
Macrosiphum carnosum (Buckton) Lindinger, 1932 : 277.
Macrosiphon carnosus (Buckton); Börner & Schilder, 1932 : 628.
Acyrthosiphon carnosum (Buckton) Hille Ris Lambers, 1933 : 171.
Acyrthosiphon (*Microlophium*) *carnosum* (Buckton) Kloet & Hincks, 1945 : 63.
Microlophium evansi (Theobald) Hille Ris Lambers, 1949 : 209, Börner, 1952 : 142, Stroyan *in* Kloet & Hincks, 1964 : 80.

LECTOTYPE here designated: apterous viviparous female. '*S. carnosa*'. Surrey, Haslemere, Weycombe. *Urtica urens* (?). 17.vi.(year ?). (*Buckton*). (*90**).

Paralectotypes: 1 apterous viviparous female, 2 late-stage larvae. Data as lectotype. (*90**).

Related material ('*urticae*'): 1 apterous, 1 alate viviparous females, 1 nymph, 1 larva. No data. (*511*); 2 alate viviparous females. 'Nettle. June. W[eycombe?].' No other data. (*512*); 1 larva. '*Urtica urens*'. No other data. (*513*); 2 apterous, 1 alate viviparous females, 1 larva. 'Nettle'. Middlesex, Southgate. 20.vii.1847. (*Walker*). (*W. 1034*).

Apterous viviparous female. (Plate 3, fig. 59; Text-figs 17–21.) *Colour* of macerated specimen: uniformly pale except for very slight darkening around antennal joints and at tibial apices.



FIGS 17–21. *Microlophium carnosum* (Buckton). Paratype (*90b*): Fig. 17. Head, upper (left) and lower surfaces. Lectotype: Fig. 18. Right antenna (segments V and VI imperfect). Fig. 19. Apex of rostrum. Fig. 20. Cauda. Fig. 21. Siphunculus.

Morphology: body 3·4–3·6 mm long, slightly more than twice as long as broad. Head smooth, antennal tubercles large, prominent, diverging, cephalic hairs long, maximally 65–75μ, acute or with spear-shaped apices. Antennal segments I–IV smooth, V slightly imbricated, VI normally so; III with 3 small circular secondary rhinaria near the base; antennal hairs sparse, blunt, up to about 50μ long. Flagellum a little longer than the body; length ratios of segments III–VI about 123 : 87 : 68 : 22 + 96(?). Rostrum scarcely reaching hind coxae, ultimate segment 0·146–0·150 mm long, equal to or slightly shorter than second segment of hind tarsus, with about 10 non-apical hairs. Femora and tibiae smooth, femoral hairs acute, up to 56μ long; tibial hairs similar, but reaching 61–65μ in length, becoming numerous towards tibial apices. First tarsal segments on all legs with 3 hairs. Tergum smooth, hairs sparse, up to 52μ long on anterior segments, reaching 65μ on eighth tergite, which bears 8–9 hairs. Siphunculi 1·25 mm long, straight, expanded at base, with pronounced apical flange, almost completely smooth, with 2–3 rows of reticulations next to the flange. Cauda 0·42–0·43 mm long, about twice as long as its basal width, slightly constricted at about one-third of its length from the base, with 9–10 hairs. Subgenital plate with 2 long and 5 shorter hairs on anterior half, and 16–18 along posterior margin.

NOTES. Buckton originally regarded *carnosa* as a variety of the large green nettle aphid known to him as *Siphonophora urticae*. In fact he distinguishes three varieties of this species, two of which, both green, he describes as Variety α and Variety β (1876 : 143) and figures on plate 19. His sheet of drawings of *carnosa* (plate 20), which show a dark, purplish grey aptera, an alata with brown body and green markings, a pink and green nymph and an almost colourless newborn larva, was at first entitled '*Siphonophora urticae* No. 2, var γ', but he altered the name to *carnosa* in the belief that it differed specifically from *urticae*. On the back of the sheet he appends descriptive notes of the four morphs he drew, and which he describes in greater detail in the text (1876 : 144, 145). The reasons he gives for separating *carnosa* from *urticae* are that '*urticae* is a larger insect, the antennae are disproportionately long, the wings are narrower, the thoracic lobes are more pronounced, and the abdomen is spotted laterally.'

The only extant specimens named *carnosa* by Buckton are two imperfect adult apterae and two larvae, remounted in balsam by Laing. Examples of the other morphs described and figured, except the newborn larva, are, however, included among specimens named *urticae*, but there is no indication of which, if any, of these were used as models for *carnosa* and not for *urticae*. One of the two alatae on *512* shows some similarities to his original for the figure of the alate *carnosa*, but there is no proof that one relates to the other.

Evidence of host plant associations is equally inconclusive. In the published text *carnosa* is recorded from 'the stinging nettle, *Urtica urens*' and *urticae* from 'the stinging nettle, *Urtica dioica*'. Though Buckton separates the two nettles by their specific names, he apples the same vernacular name to both. His manuscript notes record the hosts of *carnosa* as stinging nettle and *Rubus fruticosus*. The notes for *urticae* were destroyed when he cut out the individual drawings and remounted them in new positions on a fresh sheet. The only slide to bear a specific host identification is *513*, which contains a single larva and is marked *Urtica urens*. One other slide is marked 'nettle'; that named *carnosa* bears no data other than the name.

Hille Ris Lambers (1933 : 171), following Lindinger (1932), used the name *carnosum* Buckton to replace *urticae* Schrank (preoccupied) for the large green nettle aphid. But later (H.R.L., 1947 : 204) he applied to this species the name *evansi* Theobald and used *carnosum* to replace *sibiricum* Mordvilko, 1914, a similar but darker and more sclerotic *Microlophium* with strongly imbricated siphunculi and a narrower cauda with fewer hairs, recorded from *Urtica dioica* and *U. urens* in Siberia but on *urens* only in the Netherlands. He acted in the belief that Buckton's dark coloured aphid described from *Urtica urens* was *sibiricum*, but he did so without having had an opportunity to examine Buckton's specimens.

The nearest approach to authenticated specimens of *carnosum* are the two adult apterae and two larvae named *carnosa* by Buckton. Though incomplete, they show most of their more important characters reasonably well, but in none can I detect any morphological difference between them and the remainder of Buckton's material named *urticae*, all of which agrees with the current concept of *Microlophium evansi* (Theobald).

The evidence, such as it is, suggests that Buckton's first surmise was correct, namely that *carnosum* is only the dark reddish or purplish colour-form of the large green nettle aphid which occurs commonly during the summer, often mixed with the typical green form. Buckton's diagnostic characters for *carnosa* (which seem to refer only to the alata, of which no named specimens exist) contain nothing to conflict with this conclusion. Furthermore, although *sibiricum* has been recorded from Western Europe, Siberia, Japan and North America, it has not, so far as I can discover, been found in Britain.

I can see no alternative, therefore, but to restore the name *carnosum* Buckton to the large green nettle aphid in place of *evansi* Theobald, and I select as lectotype the better preserved of Buckton's two adult apterae on *90*. The name of the other *Microlophium* thus reverts to *sibiricum* Mordvilko, 1914.

Callipterus castaneae Buckton = ***Myzocallis castanicola*** Baker

Callipterus castaneae Buckton, 1881 : 26; pl. 91, figs 5–9. [Homonym of *Callipterus castaneae* Fitch, 1856 : 471.]
Myzocallis castanicola Baker, 1917 : 424.
Myzocallis davidsoni Swain, 1918 : 1.
Myzocallis assimilis Börner, 1940 : 2.

LECTOTYPE here designated: ovipara. Surrey, Haslemere. *Castanea sativa.* 13.xi.(year ?). (*Buckton*). (*98*).

Paralectotypes: 5 alate viviparous females, 5 nymphs, 1 ovipara. Surrey, Haslemere. iv. (year ?). (*Buckton*). (*95, 96, 97*.)

BIOMETRIC DATA. Lectotype, ovipara: body length 1·88 mm, antennae incomplete, ratios of segments III–base VI 44 : 29 : 24 : 10 + ?, siphunculus 0·10 mm long, 0·07 mm wide at flange, cauda not measurable, ultimate rostral segment 0·12 mm, second segment of hind tarsus 0·14 mm, articular diameter of ant. seg. III 28μ, longest hair on ant. seg. III ±20μ, on vertex 0·15μ, on hind femur ±24μ, on hind tibia ±50μ, on tergite III ±80μ, on tergite VIII 140μ.

Paralectotype, alata: body length 1·48 mm, ant. flag. 1·32 mm, ratios of ant. segs III–VI 65 : 36 : 25 : 13 + 29, secondary rhinaria on III 6, siph. 0·09 mm long, 0·04 mm wide at apex, cauda not measurable, caudal hairs 9, ult. rost. seg. 0·11 mm, second seg. hind tarsus 0·11 mm, artic. diam. ant. seg. III 22μ, longest hair on ant. seg. III 12μ, on vertex 30μ, on hind femur 20μ, on hind tibia 30μ, on tergite III 35μ, on tergite VIII 40μ.

Buckton describes the alate viviparous female, nymph and ovipara, and, in addition, the 'apterous viviparous female'. Apterae viviparae do not occur in this species, and what he describes is an ovipara, as is shown by his original drawing for figure 5. This according to the legend represents the apterous viviparous female, but the sketch is marked November 12 and was apparently drawn from the ovipara on *98*, dated November 13. Both original and published figure show two ova beside the specimen. Since the evidence linking specimen and figure is so strong I choose this ovipara as lectotype.

Pemphigus cinchonae Buckton: *nomen nudum.*

Pemphigus cinchonae Buckton, 1889*a* : 6.
Pemphigus cinchona Buckton; Wilson & Vickery, 1918 : 57.
Pemphigus cinchona Buckton; Patch, 1938 : 226, 348.

In an article on Indian insect pests (Rhynchota), Atkinson records having sent to Buckton for identification a sample of insects, thought to be aphids, infesting leaves of cinchona at Sikkim in August, 1888, and quotes Buckton's reply in which he assigns them tentatively to the genus *Cerataphis* but reserves his opinion on their specific status pending receipt of more material. Immediately following this record is a brief note of another aphid having been sent to Buckton, who named it provisionally *Pemphigus cinchonae*, but again deferred describing it until he could study more material. The note adds no further data.

In the Buckton Collection there is one slide (*104**), remounted and relabelled by Laing, containing specimens of an unidentified aleyrodid and bearing data which relate it to the '*Cerataphis* sp.' in Atkinson's first record. But neither specimens nor other evidence of identity have come to light which can be related to *Pemphigus cinchonae*.

Siphonophora circumflexa Buckton = ***Aulacorthum (Neomyzus) circumflexum*** (Buckton)

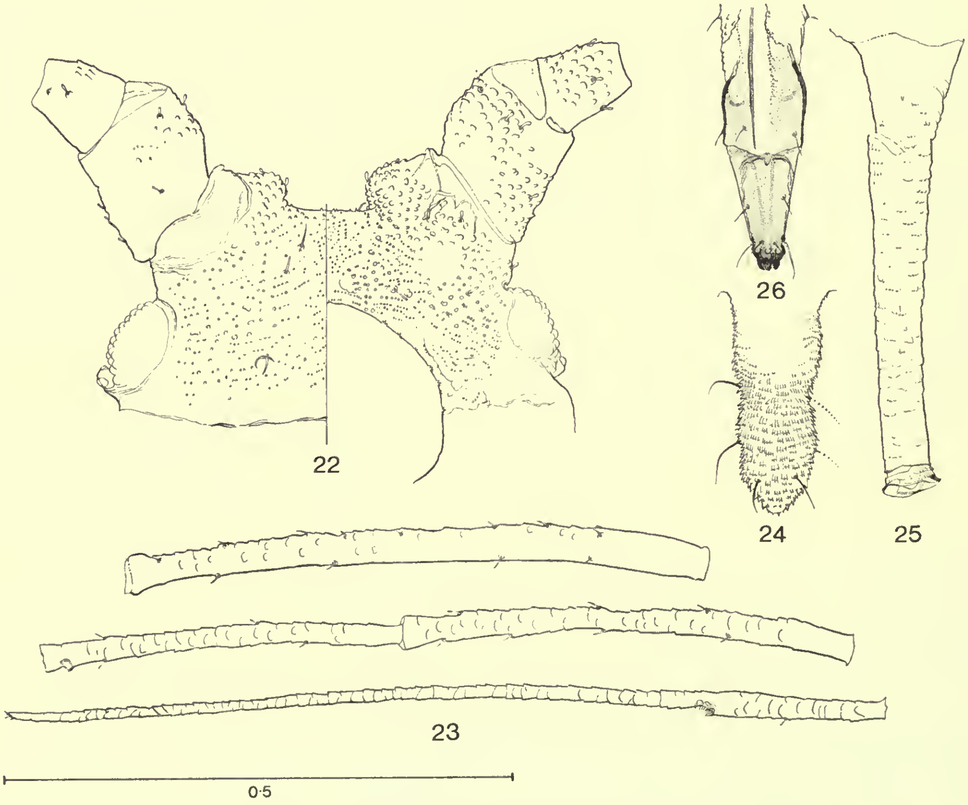
(Pl. 3, fig. 60; Text-figs 22–26)

Siphonophora circumflexa Buckton, 1876 : 130; pl. 13, figs 1–4.
Macrosiphum circumflexum (Buckton) Schouteden, 1906*a* : 238.
Myzus vincae Gillette, 1908 : 19.
Siphonophora callae Henrich, 1910 : 26.
Myzus circumflexus (Buckton) Davis, 1914*a* : 121.
Neomyzus circumflexus (Buckton) van der Goot, 1915 : vii.
Macrosiphum pelargonii var. *circumflexa* (Buckton) van der Goot, 1915 : 82.
Aulacorthum circumflexum (Buckton) Timberlake, 1924 : 457.
Amphorophora circumflexa (Buckton) Börner & Schilder, 1932 : 624.
Aulacorthum (*Neomyzus*) *circumflexum* (Buckton) Hille Ris Lambers, 1947 : 313, 1949 : 198.

LECTOTYPE here designated: apterous viviparous female. Surrey, Haslemere, Weycombe. *Sparaxis* sp. ii. (year ?). (*Buckton*). (*106c**).

Paralectotypes: 5 apterous viviparous females, 2 larvae, 1 nymph. Data as lectotype. (*105*, *106a**, *106b**, *106d**).

Apterous viviparous female. (Plate 3, fig. 60; Text-figs 22–26). *Colour* of macerated specimen: body and appendages pale except for the dorsal dark patches on either side of the median line of the thorax, the characteristic irregularly U-shaped patch on the abdomen, and a slight darkening around the articulations of the antennal segments. *Morphology:* body 1·92–2·66 mm long, oval, slightly less than twice as long as broad. Head coarsely spinulose on upper and under sides. Antennal tubercles rather short, their inner surfaces rounded and slightly protruding and bearing one or two short blunt hairs. Vertex with very few hairs, variable in length, the longest reaching 26μ, blunt or with slightly expanded apices. Antennae coarsely imbricated throughout, the imbrication being mainly confined to the ventral surfaces of all but the sixth segment. Antennal hairs very sparse, blunt or acute, the longest on III only about one-third of the articular diameter of the segment. Processus terminalis nearly four times as long as the base of VI. The flagellum very slightly longer than the body. Length ratios of segments III–VI about 57 : 44 : 39 : 18 + 72. Rostrum reaching to between second and third coxae, ultimate segment with straight sides and rounded apex and with two non-apical hairs, 0·12 mm long,



Figs 22–26. *Aulacorthum* (*Neomyzus*) *circumflexum* (Buckton). Lectotype: Fig. 22. Head, upper (left) and lower surfaces. Fig. 23. Left antenna. Fig. 24. Cauda. Fig. 25. Siphunculus (fractured). Paratype (*106a*): Fig. 26. Apex of rostrum.

about twice as long as its basal width and about 1·2 times as long as second segment of hind tarsus. Areas of spinulosity, like that on the head but less dense, occur on and around the coxae, in some specimens spreading on to the trochanters and even the bases of the femora. Legs slender, hairs short and sparse, those on the femora rather stout, blunt, up to 20μ long; tibial hairs longer, more numerous near the apex, the longest reaching 34μ. Hind tibia about two-thirds of the body length. First tarsal segments with 3, 3, 3 hairs. Tergum of abdomen sclerotic, almost smooth, with sparse, very short blunt hairs about 10μ long. Eighth tergite with 4 longer blunt hairs, the longest 22μ. Siphunculi 0·41–0·57 mm long, straight, apical two-thirds cylindrical, expanded at base, imbricated over whole length with a few apical striae and distinct flange, slightly less than a quarter of the body length, about equal to antennal segment IV, about 10 times as long as their middle diameter. Cauda 0·20–0·26 mm long, finger shaped, slightly constricted in the middle, with 3 pairs of lateral hairs, about 2·25 times as long as its basal width and half as long as the siphunculi. Subgenital plate with 2 hairs on the anterior half and 8 shorter ones along the posterior margin.

NOTES. Buckton's specimens named *circumflexa* include, in addition to those listed above, two alate viviparous females and two nymphs of *Brachycaudus helichrysi* (Kaltenbach) (*105*). Sketches of head, antenna, rostrum and siphunculi of alate *helichrysi* occur on the same sheet with the originals of *circumflexum*, but are named *cinerariae* and have not been published. The alate *circumflexum* described and figured was taken, according to Buckton's notes, in a greenhouse at Chichester in May (the notes are dated May 8). This specimen is missing from the Buckton collection.

A full account of *circumflexum* is given by Hille Ris Lambers (1949 : 198–201).

Pemphigus coccus Buckton: *nomen dubium*

Pemphigus coccus Buckton, 1889*b* : 141.
Pemphigus coccus Buckton; Ghulamullah, 1941 : 225.
Pemphigus coccus Buckton; Takahashi, 1966 : 263.

Buckton's brief and inadequate description of this species is based on immature specimens taken from dried galls on *Pistacia vera* in Afghanistan in 1885. No specimens so named or identifiable with the known data have come to light, nor any other clue to the identity of the species. Ghulamullah and Takahashi both cite the record of *coccus* Buckton but make no comment. The name must be regarded as a *nomen dubium*.

Aphis crithmi Buckton = ***Dysaphis crithmi*** (Buckton)

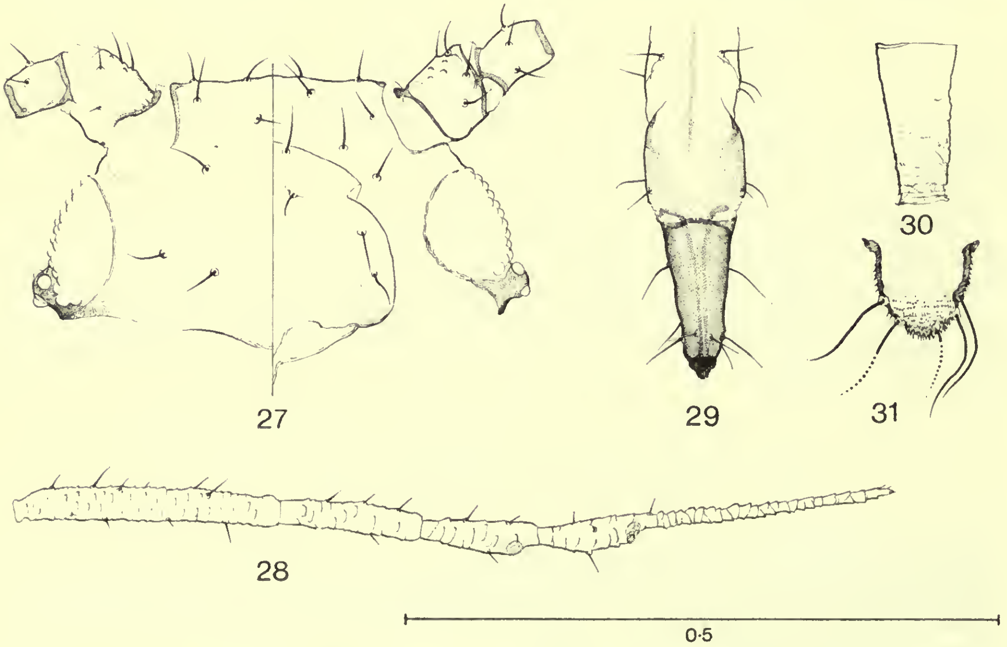
(Pl. 4, fig. 61; Text-figs 27–31)

Aphis crithmi Buckton, 1886 : 323; pl. 4, figs 1–6.
Anuraphis crithmi (Buckton) Theobald, 1927 : 405.
[*Brachycaudus helichrysi* (Kaltenbach); Hille Ris Lambers, 1934 : 32. Misidentification.]
Aphis (*Anuraphis*) *crithmi* Buckton; Balachowsky & Cairaschi, 1941 : 99.
?*Yezabura crithmi* (Buckton) Börner, 1952 : 229.
Dysaphis crithmi (Buckton) Stroyan, 1963 : 47.

LECTOTYPE here designated: apterous viviparous female. Devon, Kingsbridge. *Crithmum maritimum*. vii. 1886(?). (*Bignell*). (*132**).

Paralectotypes: 7 apterous, 2 alate viviparous females, 4 larvae, 3 nymphs. Data as lectotype. (*131**, *132**).

Apterous viviparous female. (Plate 4, fig. 61; Text-figs 27–31). *Colour* of macerated specimen: head, thorax and sclerotic parts of abdomen pale to mid-brown, remainder of abdomen pale to almost colourless. Antennae mid-brown, becoming darker towards apices. Fore and middle legs mid-brown, hind legs darker. Apex of rostrum, siphunculi and anal plate dark brown. *Morphology:* body 1·88 mm long, oval, not quite twice as long as broad. Head smooth, frons flat, cephalic hairs stout, spiny, up to about 36μ long. Antennae with segments I and II nearly smooth, III–VI imbricated, antennal hairs stout, blunt, the longest about equal to the articular diameter of III. Processus terminalis about 2·8 times as long as base of VI. Flagellum about two-fifths of the body length. Length ratios of segments III–VI about 24 : 12 : 10 : 7 + 21. Rostrum reaching third coxae, ultimate segment 0·14 mm long, rather narrow, elongate, about 1·25 times as long as hind tarsus II (0·11 mm), with 2 non-apical hairs. Femora rather stout, with fairly fine, acute hairs, up to 34μ long. Tibial hairs similar, becoming longer towards apex of tibia, reaching about 50μ. Hind tibia about one-third of body length. First tarsal segments with 3, 3, 2 hairs. The abdomen bears a row of paired spinal scleroites from segments I–V, a broken sclerotic transverse band on VI, and continuous transverse bands on VII and VIII. Pleural and marginal scleroites are less conspicuous than the spinals. Abdominal hairs stout, spiny, short (up to 20μ) on anterior segments, becoming longer on posterior segments, reaching 72μ on VIII. Rather small marginal tubercles present on segments I–V. Spinal tubercles absent altogether. Siphunculi short (0·134 mm), slightly shorter than apical rostral segment, about 2·75 times their middle diameter and 1·7 times as long as the cauda, slightly tapered and with a few imbrications. Cauda 0·082 mm long, about as long as its basal width, with 5 hairs.



FIGS 27–31. *Dysaphis crithmi* (Buckton). Lectotype: Fig. 27. Head, upper (left) and lower surfaces. Fig. 28. Right antenna. Fig. 29. Apex of rostrum. Fig. 30. Siphunculus. Fig. 31. Cauda.

Notes. There were originally two slides made by Buckton of *crithmi*, both of them in very poor condition with the balsam emulsified and the specimens obscured. Both bore the data '*Aphis crithmi*. Samphire.' and one also included the date (July) and 'Plymouth'. In his published description Buckton records *crithmi* from *Crithmum maritimum* at Kingsbridge, Devon, and adds that specimens were sent him by G. C. Bignell, who lived at Plymouth. Apart from the omission of date and locality from one of the labels, Buckton's two slides were so similar in all other respects that I regard the specimens they contained as having all belonged to the same sample.

Theobald (1927 : 405) records having examined one of Buckton's slides of *crithmi* (that containing two alatae, now *131**), but found the specimens so heavily obscured that he could make little of them beyond concluding that they agreed with his concept of *Anuraphis*. Laing had marked both slides '? *helichrysi* Kaltenbach' and noted that they should be remounted, but he never did so. Even after remounting into gum-chloral many of the specimens still suffer from shrivelled or collapsed appendages.

Hille Ris Lambers (1934 : 32) places *crithmi* Buckton as synonym of *Brachycaudus helichrysi* (Kaltenbach). At that time, when Buckton's two slides would have been in their original state and the specimens scarcely visible, Laing's tentative identification of them as *helichrysi* would have seemed reasonable enough.

Neither the original drawings for Buckton's plate of *crithmi* nor any manuscript notes relating to it have so far come to light.

Stroyan deals fully with *crithmi* in his revision of the British species of *Dysaphis* (Stroyan, 1963 : 47–48).

Aphis cucurbitae Buckton = ***Aphis gossypii*** Glover

Buckton, 1879 : 56; pl. 54, figs 1, 2.

LECTOTYPE here designated: alate viviparous female. Surrey, Carshalton. *Cucumis melo*. 26.ix.(year ?). (*Smee*). (*139*).

Paralectotypes: 5 apterous, 4 alate viviparous females, 7 nymphs, 1 larva. Data as lectotype. (*138*, *139*).

Biometric data. Lectotype alata: body length 1·66 mm, antennal flagellum 1·02 mm, ratios of segments III–VI 31 : 31 : 23 : 14 + 39, secondary rhinaria on III 8, siphunculus 0·19 mm, cauda 0·12 mm, caudal hairs 5, ultimate rostral segment 0·097 mm, second segment of hind tarsus 0·083 mm, eighth tergite with 2 hairs, articular diameter of ant. seg. III 16μ, longest hair on ant. seg. III 12μ, on hind femur 20μ, on hind tibia 30μ, on eighth tergite ±25μ.

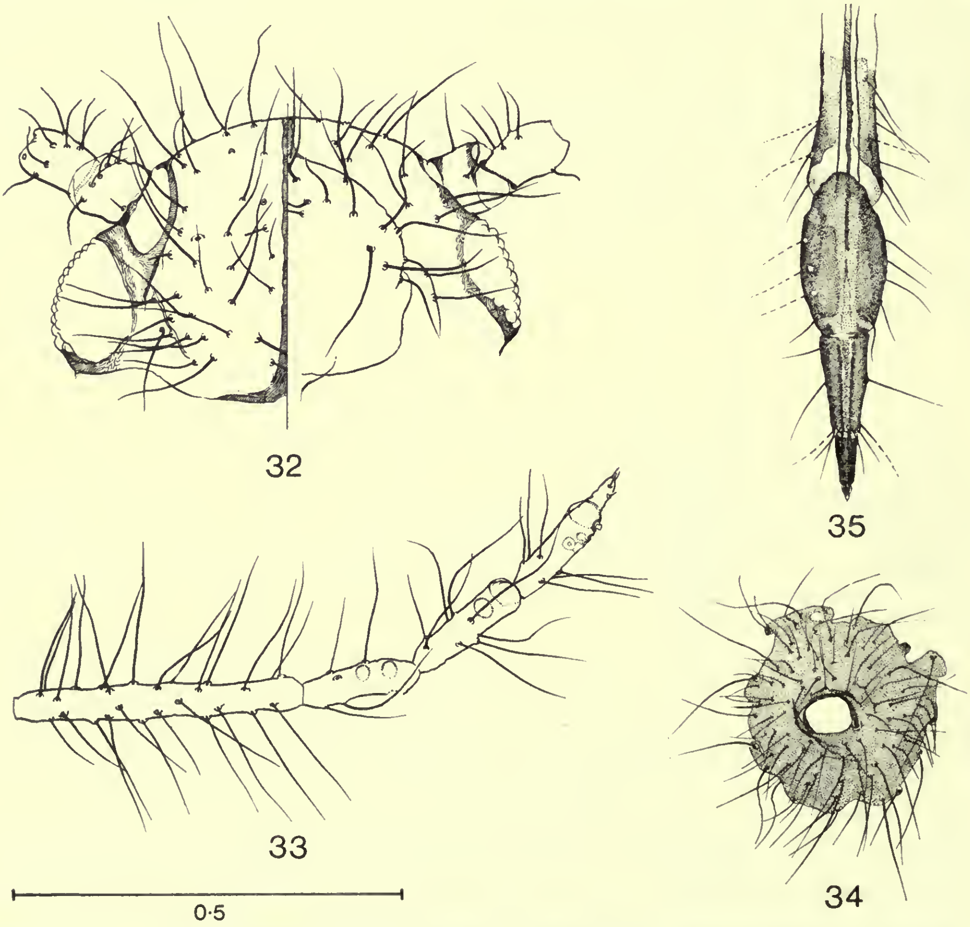
Paralectotype aptera: body length 1·84 mm, ant. flag. 1·08 mm, ratios segs III–VI 34 : 25 : 22 : 13 + 41, siph. 0·29 mm, cauda 0·14 mm, caudal hairs 4, ult. rost. seg. 0·10 mm, second seg. hind tarsus 0·09 mm, eighth tergite with 2 hairs, artic. diam. ant. seg. III 24μ, longest hair on ant. seg. III 14μ, on hind femur ±30μ, on hind tibia 35μ, on eighth tergite ? (not measurable).

Both Buckton's slides have been labelled *Aphis gossypii* Glover by Laing. Theobald (1927 : 141, 145) published this synonymy and subsequent authors have accepted it.

Lachnus cupressi Buckton = ***Cinara cupressi*** (Buckton)

(Pl. 4, fig. 62; Text-figs 32–35)

Lachnus cupressi Buckton, 1881 : 46; pl. 102, figs 1–3.
Lachnus juniperinus Mordvilko, 1894 : 134.
Lachniella tujae Del Guercio, 1909 : 309.
[*Lachnus juniperi* (De Geer); van der Goot, 1915 : 396. Misidentification.]
Dilachnus cupressi (Buckton) Swain, 1921 : 212.
Lachnus sabinae Gillette & Palmer, 1924 : 9.
Panimerus cupressi (Buckton) Theobald, 1929 : 148.
[*Panimerus juniperi* (De Geer) Theobald, 1929 : 151 partim.]
Panimerus tujae (Del Guercio) Theobald, 1929 : 153.
Cinara cupressi (Buckton) Börner & Schilder, 1932 : 570; Braun, 1938 : 480; Hottes & Essig, 1953 : 172; Szelegiewicz, 1962 : 83.



FIGS 32–35. *Cinara* (*Cupressobium*) *cupressi* (Buckton). Lectotype: Fig. 32. Head, upper (left) and lower surfaces. Fig. 33. Right antennal segments III–VI. Fig. 34. Siphunculus. Paratype (*140a*): Fig. 35. Apex of rostrum.

Cinara tujae (Del Guercio) Braun, 1938 : 480.
Neochmosis cupressi (Buckton) Kloet & Hincks, 1945 : 70.
Neochmosis tujae (Del Guercio) Kloet & Hincks, 1945 : 70.
Cupressobium cupressi (Buckton) Börner, 1952 : 45.
Cinara canadensis Hottes & Bradley, 1953 : 86.

LECTOTYPE here designated: apterous viviparous female. Cornwall, Probus. *Cupressus* sp. 17.xi.1879. (*Boscawen*). (*140**).

Paralectotypes: 3 apterous, 1 alate viviparous females, 1 nymph. Data as lectotype. (*140a**, *140b**, *140c**, *140d**, *140e**).

Apterous viviparous female. (Plate 4, fig. 62; Text-figs 32–35). *Colour* of macerated specimen: head and body more or less uniformly pale brown; antennae with segments I and II pale brown as head, III paler with very slight darkening at apex, IV and V with basal halves pale, apical halves and whole of VI slightly darker. Apical segments of rostrum dark brown. Coxae and trochanters dark brown; femora pale on basal half, the rest somewhat darker; tibiae pale with a small dark brown area at the knee and less pronounced darkening at the apices; tarsi brown. Siphuncular cones, cauda, anal and subgenital plates, stigmal plates and muscle-plates brown. *Morphology:* body 2·70–2·92 mm long, broadly oval, about 1·7 times as long as broad. Head more or less semicircular in outline, clothed with numerous long fine hairs, the longest (frontal) reaching about 145μ. Antennae of 6 segments, about one-third as long as the body, with rather numerous long fine hairs ranging maximally from 177–197μ on segment III. II with 9 or 10 hairs, VI with 4–6 hairs confined to the basal third of the segment, processus terminalis with 3 subapical setae; length ratios of segments III–VI about 36 : 15 : 17 : 14 + 4, secondary rhinaria confined to IV, with 1 or 2, and V, with 1. Rostrum reaching a little beyond third coxae, ultimate segments 0·147 and 0·085 mm long respectively, slender and tapering, fourth segment with 3 or 4 non-apical hairs. Legs short and stout with numerous long fine hairs reaching about 200μ on hind tibia, which is about two-fifths of the body length. First tarsal segment with dorsal side much shorter than the basal diameter (23 : 42μ). Second tarsal segment 0·24–0·26 mm long, slightly longer than rostral segments 4 and 5 together. Abdominal dorsum membranous with conspicuous muscle-plates, small sclerotic stigmal plates, a transverse row of 4 scleroites on tergite VII and two irregular transverse sclerotic bands on VIII. Siphuncular cones from 0·25–0·30 mm in diameter, shallow (quite unlike Buckton's exaggerated figure), with numerous hairs in 4–5 whorls. Cauda very broadly triangular with more or less rounded sides, about one-third as long as its basal width.

NOTES. In this instance Buckton's published figures are an improvement on his originals, which are carelessly drawn and crudely coloured. His notes add nothing to the published record.

Hyalopterus dilineatus Buckton = ***Longicaudus trirhodus*** (Walker)

Buckton, 1879 : 113; pl. 76, figs 1–7.

LECTOTYPE here designated: alate viviparous female. Northumberland, Alnwick. *Rosa centifolia* var. *muscosa* ('Moss Rose'). v. (year ?). (*Hardy*). (*147*).

Paralectotypes: 1 larva, 4 nymphs. Data as lectotype. (*146*).

BIOMETRIC DATA. Lectotype, alata: body length 1·88 mm, antennal flagellum 1·38 mm, ratios of segments III–VI 95 : 21 : 21 : 16 + 20, secondary rhinaria on III 84, siphunculus 0·10 mm, cauda 0·22 mm, caudal hairs 14, ultimate rostral segment 0·09 mm, second segment of hind tarsus 0·14 mm, eighth tergite with 4 hairs, articular diameter of ant. seg. III 32μ, longest hair on ant. seg. III 16μ, on hind femur 30μ, on hind tibia 40μ, on eighth tergite ±20μ.

Buckton's specimens named *dilineatus* are a mixture of *Longicaudus trirhodus* (Walker) (see above; *146, 147*), *Macrosiphum rosae* (L.) (*146*) and *Myzaphis bucktoni* Jacob (3 apt. viv. females on *145**, *145a**, *145b**). The slide data on *146* and *147* indicate that the *trirhodus* and *rosae* are the material sent by Hardy from Alnwick, referred to under Buckton's description of the nymph (1879 : 113). The three apterae of *bucktoni*, therefore, would seem to belong to the material recorded from Haslemere and Wanstead on *Rosa centifolia* in July (the slide labels include no locality or date). Wanstead suggests Walker, but none of Walker's extant slides contains *bucktoni*. A Walker slide (*W. 841*) in Buckton's collection contains *rosarum* Kaltenbach which Buckton may have confused with *bucktoni*.

On his plate of *dilineatus* Buckton figures the young larva, nymph and alata of *trirhodus*, and the adult aptera of *bucktoni*. His original drawing of the adult aptera is a good representation of *bucktoni*, better than the coloured lithograph, and shows (what the latter does not) that Buckton was uncertain of the true length of the siphunculi, leaving their extremities unfinished and indicated only vaguely by dotted lines. From his manuscript notes, which accurately describe his drawing, it seems that at first he regarded *bucktoni* as the adult aptera of *dilineatus*, but in his published account he modifies this view and describes the larva of *trirhodus* as the adult aptera (I regard the larva on *146* as his probable model), adding a brief description of 'variety α' which, as Jacob (1946 : 110) points out, refers to *bucktoni* (but he omitted to alter the caption to figure 3 accordingly). The descriptions of the nymph, and the alata bred from one of the nymphs sent by Hardy, certainly refer to *trirhodus*.

Buckton also describes and figures (figs 5, 6, 7) the oviparous female of *dilineatus*, but there is no specimen of an ovipara so named and the original drawings for these figures are missing. Figures 6 and 7, showing an enlarged antenna and abdominal appendages, suggest *Myzaphis rosarum* (Kaltenbach), but there is no proof that this is so, and the identity of the ovipara must remain uncertain.

Since three of the four morphs described and figured are all supported by specimens of *Longicaudus trirhodus*, I place *dilineatus* Buckton, as other authors have done, as a synonym of *trirhodus* Walker.

Theobald (1927 : 38) places *dilineatus* in *Longicaudus* and redescribes it, believing it to be distinct from *trirhodus*. However, he quotes Laing as being doubtful whether Buckton's alate female is distinct from *trirhodus*. Hille Ris Lambers (1934 : 26) considers Theobald's material named *dilineatus* to be *trirhodus* Walker. It is unlikely that he saw Buckton's material. Jacob (1946) gives a full account of *Myzaphis bucktoni*, which he identifies with the description and figure of Buckton's 'variety α' of *dilineatus*, but without having seen Buckton's specimens. Buckton's three adult apterae of *bucktoni* agree in all respects with Jacob's diagnosis.

Aphis edentula Buckton = ***Rhopalosiphum insertum*** (Walker)

Aphis inserta Walker, 1849*b*: app. xxxix. Lectotype, alate viviparous female, ENGLAND: Essex (BMNH).

Aphis edentula Buckton, 1879 : 39; pl. 48, figs 1–3. **Syn. n.**

(For full synonymy, see Doncaster, 1961 : 86.)

LECTOTYPE here designated: ovipara. Essex, Wanstead. *Crataegus monogyna*. 7.xi.(year ?). (*Walker*). (*130*).

Biometric data. Lectotype, ovipara: body length 1·52 mm, antennal flagellum 0·51 mm, ratios of segments III–V 23 : 10 : 8 + 22, siphunculus 0·12 mm, cauda not measurable, caudal hairs 5 (?), ultimate rostral segment 0·10 mm, second segment of hind tarsus 0·10 mm, eighth tergite with 4 (?) hairs, articular diameter of ant. seg. III 16μ, longest hair on ant. seg. III 10μ, on hind femur 12μ, on hind tibia 25μ, on eighth tergite ±25μ.

Buckton describes the apterous viviparous female, the nymph, the alate viviparous female and the ovipara, but he figures only the last three morphs. The specimens, he says, were sent to him by Walker, who collected them from *Crataegus* at Wanstead in November. There are no slides in Buckton's collection labelled *edentula* and, from the data available, I can trace no specimens which might have been his models for the nymph and alata. But on slide *130*, labelled '*A. crataegi* Walk: ovip. female. Nov.' in Buckton's hand, are three oviparae of *Rhopalosiphum insertum* (Walker), one of which corresponds reasonably well with the original for figure 3 and his measurements and description of the oviparous *edentula*. Since the data on the slide correspond with the published data and also with a manuscript note on the sheet of original drawings 'ovip. female on Whitethorn Nov. 7. Walk.', I believe this specimen to be Buckton's type of the ovipara of *edentula*, which I therefore place as a synonym of *insertum* Walker.

Theobald (1927 : 213) quotes Buckton's account of *edentula* in full, adding only that the species is not represented in Buckton's collection.

Börner (1952 : 70) correctly puts *edentula* as synonym of *oxyacanthae* Schrank = *insertum* Walker.

Schizoneura fodiens Buckton = ***Schizoneura ulmi*** (L.)

Buckton, 1881 : 94; pl. 106, figs 6–12.

LECTOTYPE here designated: apterous viviparous female. Surrey, Haslemere. *Ribes nigrum*. 15.x.(year ?). (*Buckton*). (*183**).

Paralectotypes: 3 alate viviparous females, 12 nymphs, data as lectotype. (*181**, *182*, *183a**, *184*).

Biometric data. Lectotype, aptera: body length 1·54 mm, whole antenna 0·32 mm, ratios of segments I–V 13 : 11 : 28 : 13 : 37, siphuncular diameter 0·07 mm, ultimate rostral segment 0·13 mm, second segment of hind tarsus 0·08 mm, articular diameter of ant. seg. III 33μ, longest hair on ant. seg. III 45μ, on hind femur 40μ, on hind tibia 50μ.

Paratype, alata: body length 1·72 mm, antennal flagellum 0·63 mm, ratios segs III–VI 50 : 12 : 8 : 5 + 3, secondary rhinaria on seg. III 18, on IV 2, on V 0, on VI 0, siph. diam. 0·07 mm, ult. rost. seg. 0·13 mm, second seg. hind tarsus 0·10 mm, artic. diam. ant. seg. III 16μ, longest hair on ant. seg. III 42μ, on hind femur 44μ, on hind tibia 50μ.

Buckton describes and figures the apterous viviparous female, nymph and alata, and adds figures of a newborn larva and details of wings and alate antenna. All his specimens named *fodiens* are *Schizoneura ulmi* (L.), and I have selected as lectotype the single aptera on *183*, the slide data of which correspond exactly with those of his original drawing of that morph (fig. 6), and which was doubtless the specimen described and figured. Buckton's published description is incorrect in giving the antennal length as 'three quarters the length of the body'; his MS notes give the ratio as one-third, and his published measurements (antenna 0·38 mm : body 1·39 mm) are about right when matched with the mounted specimen. The specimen is rather small for an apterous exule of *ulmi*, and the tarsi are less spinulose than those of other specimens I have examined, but other characters, particularly the wax-gland rosettes with conspicuous central ring, agree well.

Endeis formicina Buckton = ***Baizongia pistaciae*** (L.)

Buckton, 1883 : 91; pl. 129, figs 1 and 3.
(For synonymy, see *aedificator*, p. 31.)

LECTOTYPE here designated: apterous viviparous female. Northumberland, Cheviot. *Poa pratensis* (? or *Carex dioica*) roots. v. (year ?). (*Hardy*). (*189**).

BIOMETRIC DATA. Lectotype, aptera: body length 1·46 mm, whole antenna 0·27 mm, ratios of segments I–V 17 : 16 : 16 : 13 : 31, ultimate rostral segment 0·13 mm, second segment of hind tarsus 0·10 mm, primary hairs on subanal plate 8, longest hair on subanal plate ±80μ, eighth tergite with 6 hairs, the longest ±80μ.

Buckton's original slide labelled *Endeis formicina* (mis-spelled '*formacina*') contained 14 specimens belonging to four species: *Forda formicaria* Heyden, *Smynthurodes betae* Westwood, *Geoica eragrostidis* (Passerini) and *Baizongia pistaciae* (L.). I have remounted these specimens on separate slides (*189**, *189a*–e**) and compared them with Buckton's description and figures of *formicina*. The specimen that agrees most closely, particularly with the characters shown in the original drawings of whole insect and antenna (used for figs 1 and 3 on the plate) is the aptera of *Baizongia pistaciae* (L.). Further confirmation that this was the specimen figured is given by Buckton's MS notes in which the host plant is recorded as *Poa pratensis*, and the code letters $^{\mathrm{F}}_{\mathrm{Y}}$, which appear on the slide, are also written beside the drawing. The colour characters given in the published description (1883 : 91) agree well with those of the original drawing, but the host plant is published as *Carex dioica*. The specimens were sent by Hardy, whose name also appears on the original drawing. I therefore choose this specimen as lectotype of *formicina* Buckton.

Theobald, who recorded (1929 : 193) having seen Buckton's slide, and who also realised that it contained four species, placed *formicina* as a doubtful synonym of *Geoica squamosa* Theobald *nec* Hart (= *eragrostidis* Passerini). Börner (1952 : 197) concluded from Buckton's figures that *formicina* should be assigned to *Pemphigus*. Stroyan (*in* Kloet & Hincks, 1964 : 86) correctly placed *formicina* as synonym of *pistaciae* (L.).

Lachnus formicophilus Buckton: *nomen dubium*

Lachnus formicophilus Buckton, 1901 : 257.
Lachnus formicophilus Buckton; Donisthorpe, 1902 : 39.
Lachnus formicophilus Buckton; Schouteden, 1906*a* : 201.
Lachnus formicophilus Buckton; Donisthorpe, 1927 : 167, partim.

Buckton describes and figures a specimen sent him by Donisthorpe, who took it from a nest of *Formica rufa* at Oxshott, Surrey. Buckton gives no date, but Donisthorpe (1902) refers to this specimen and gives the date as 1900. Donisthorpe (1927) records collecting *formicophilus* from nests of *F. rufa* on 24 April, 1900, at Oxshott, and again on 6 September, 1912, at Weybridge. The Oxshott record doubtless refers to the specimen, now lost, which Buckton described; that from Weybridge is described by Theobald (1929 : 351) as *Lachnus* (?) *formicophilus* Buckton and is now in the BMNH collection.

Buckton's description is so vague that it is impossible to determine what he had before him. His roughly-sketched figure shows an aphid with long antennae and legs, rather narrow wings with normal aphidine venation, and an abdomen either shrivelled almost to nothing or absent altogether. The body is said to be small, globular, black, and covered with white flocculent matter, and the expanse of the wings is given as 11·0 mm. Buckton identifies it as a male.

The unusually large wing span and absence of visible siphunculi and cauda may have led Buckton to place this specimen in *Lachnus*, but the long antennae (about three-quarters of the length of the wings) must preclude this. The sketch certainly suggests a large aphid, possibly a Callipterine, e.g. *Euceraphis punctipennis* (Zetterstedt), or, if the wing span were not so large, *Phyllaphis fagi* (L.), which would accord with the flocculence. But if the specimen were indeed that taken by Donisthorpe on 24 April, the possibility of its being a male must be remote. I find myself in agreement with Schouteden (1906) when he writes: '. . . il me semble un peu exagéré de déclarer myrmécophile un Aphide, parce qu'un unique exemplaire, et surtout une forme ailée! s'en est rencontré dans un nid de fourmis', and I regard *formicophilus* Buckton as a *nomen dubium*.

Donisthorpe's second specimen is an apterous viviparous female of *Lachnus* (*Schizodryobius*) *longirostris* (Börner), or possibly *exsiccator* (Altum) (= *pallipes* Hartig), as Börner (1952 : 46) supposed, basing his conclusion, presumably, on Theobald's description and figure.

Lachnus fuliginosus Buckton = ***Tuberolachnus salignus*** (Gmelin)

Aphis saligna Gmelin, 1790 : 2209.
Lachnus punctatus Burmeister, 1835 : 93.
Aphis viminalis Boyer de Fonscolombe, 1841 : 184.
[*Lachnus longipes* Dufour; Buckton, 1881 : 59. Misidentification.]
Lachnus fuliginosus Buckton, 1891*b* : 40.
Tuberolachnus viminalis (Boyer de Fonscolombe) Mordvilko, 1909 : 374, Das, 1918 : 257.
Lachnus viminalis (Boyer de Fonscolombe); van der Goot in Das, 1918 : 142.
Pterochlorus viminalis (Boyer de Fonscolombe); Swain, 1921 : 211.
Pterochlorus salignus (Gmelin) Theobald, 1929 : 104.
Tuberolachnus salignus (Gmelin) Börner, 1952 : 45.

LECTOTYPE here designated: alate viviparous female. PAKISTAN, Quetta. 1890 ? (*Elliot* ?). (*197**).

Paralectotypes: 2 apterous viviparous females, 1 nymph. Data as lectotype. (*196**, *198**).

BIOMETRIC DATA. Lectotype, alata: body length 4·60 mm, antennal flagellum 1·40 mm, ratios of segments III–VI 35 : 11 : 13 : 12, secondary rhinaria on III 9, on IV 2, on V 0, siphuncular diameter 0·12 mm, ultimate rostral segment 0·19 mm, second segment of hind tarsus 0·36 mm, articular diameter of ant. seg. III 36μ, longest hair on ant. seg. III 70μ, on hind femur 80μ, on hind tibia 60μ.

Paralectotype, aptera: body length 2·84 mm, ant. flag. 0·82 mm, ratios segs III–VI 46 : 20 : 24 : 28, siph. diam. 0·11 mm, ult. rost. seg. 0·19 mm, second seg. hind tarsus 0·31 mm, artic. diam. ant. seg. III 40μ, longest hair on ant. seg. III 40μ, on hind femur 40μ, on hind tibia 55μ.

A sample of aphids said to have been taken on apricot, almond and peach trees at Quetta in 1890 was sent by the Indian Museum, Calcutta, to Buckton for identification. Believing he had a new species, he named it *Lachnus fuliginosus* and described and figured the larva, nymph and alata. There are in the BMNH 15 specimens from the sample sent from Quetta, originally mounted by Buckton on two slides. They include the three morphs Buckton described, as well as several adult apterae, and are a mixture of two species, *Tuberolachnus salignus* (Gmelin) and *Pterochloroides persicae* (Cholodkovsky). The descriptions of nymph and alata, and the three morphs figured (alata, nymph and aptera or larva) all agree with the characters of *salignus:* only the description of the larva agrees with *persicae*. These descriptions correspond closely with five specimens originally on one of Buckton's slides (2 apterae, a nymph and an alata of *salignus* and an aptera of *persicae*), named *fuliginosus*, which were remounted by Laing in 1916 on three separate slides. I regard these specimens as the type-material on which Buckton based *fuliginosus*. The second of Buckton's original slides (*199*) contains five apterae and five larvae of *persicae* only, and is labelled simply '*Lachnus* n.s. . . . Quetta', without specific name. For this reason I exclude these specimens from the type-series, although they appear to have formed part of the original sample.

Das (1918 : 258–9, 266–7) records having examined in the Indian Museum part of the same material which had been sent to Buckton, and he found that it contained a mixture of the same two species. He suggests that there may have been some accidental mixing of samples which could account for the inclusion of the *Salix*-feeding *salignus* among the *persicae* taken from *Prunus*. He realised that most of Buckton's descriptions and all his figures relate to *salignus*, and he states, moreover, that in the course of his work on elucidating *fuliginosus*, he not only compared the Calcutta material with Buckton's published account, but also sent for 'the insect from Quetta', from which I infer that he may have had an opportunity to examine at least one of the specimens originally sent to Buckton. This supposition is strengthened by Theobald (1929 : 108) who writes 'Mr Laing has examined the type of Buckton's *fuliginosus* and finds it is undoubtedly this species [i.e. *salignus*]. Buckton's slides contain *viminalis* [= *salignus*] and *persicae*, so *fuliginosus* is really a composite species, but Das selected the type and sank it as a synonym of *viminalis*.'

Although Theobald's statement implies the existence of a type of *fuliginosus*, I can find no evidence that a type designation was ever published, or even contemplated. None of the specimens now in the BMNH bears any type-label or equivalent indication, and although Dr A. P. Kapur, at my request, has kindly searched the collections in the Zoological Survey of India, which hold type-material of some of Buckton's Indian aphid species, *fuliginosus* seems not to be among them. If in fact one of Buckton's specimens was sent to Das for examination, it would most probably have been the alate female of *salignus*, mounted by Laing singly on slide *197*, rather than the nymph on *198*, or the two apterae of *salignus* and one of *persicae* on *196*. In the belief that this alata is the specimen most likely to have been the subject of Theobald's statement quoted above, I designate it here as lectotype of *Lachnus fuliginosus* Buckton.

Schizoneura fuliginosa Buckton = ***Schizolachnus pineti*** (Fabricius)

Aphis pineti Fabricius, 1781 : 389.
Aphis tomentosa Villers, 1789 : 549.
Schizoneura fulginosa Buckton, 1881 : 96; pl. 107, figs 1–6.
Glyphina pilosa Buckton, 1883 : 16.
Schizolachnus tomentosus (Villers) Mordvilko, 1909 : 375, Swain, 1921 : 212, Theobald, 1929 : 161.
Schizolachnus pineti (F.) Börner, 1952 : 40

LECTOTYPE here designated: alate viviparous female. Surrey, Haslemere, Weycombe. *Pinus nigra* var. *austriaca*. Undated. (*Buckton*). (*194*).

Paralectotypes: 1 apterous viviparous female, 2 larvae ('29.x.'), 2 larvae, undated. Data as lectotype. (*193*, *195*).

BIOMETRIC DATA. Lectotype, alata: body length 2·38 mm, antennal flagellum 0·86 mm, ratios of segments III–VI 49 : 20 : 20 : 18, secondary rhinaria on III 8, siphuncular diameter 0·07 mm, ultimate rostral segment 0·14 mm, second segment of hind tarsus 0·26 mm, articular diameter of ant. seg. III 24μ, longest hair on ant. seg. III 140μ, on hind femur 200μ, on hind tibia 200μ.

Paralectotype, aptera: body length 2·28 mm, ant. flag. 0·64 mm, ratios segs III–VI 34 : 16 : 14 : 17, siph. diam. 0·04 mm, ult. rost. seg. 0·14 mm, second seg. hind tarsus 0·27 mm, artic. diam. ant. seg. III 32μ, longest hair on ant. seg. III 120μ, on hind femur 140μ, on hind tibia 160μ.

Buckton describes and figures the adult aptera and alata, and also the nymph, a morph which is not included among his specimens. Figure 3, said to be an apterous male, appears to have been drawn from a young larva on *195*. His descriptions and figures agree tolerably well with the corresponding specimens.

Siphonophora rosae var. *glauca* Buckton = ***Macrosiphum rosae*** (L.)

Buckton, 1876 : 109; pl. 3, figs 1–3, 5–7.

There are no slides named *glauca* in the Buckton Collection and no indication in the published text of the characters Buckton uses to distinguish *glauca* from *rosae* L. His original drawings carry no manuscript notes, but resemble *rosae* so closely in appearance that I agree with Börner (1952 : 293) in regarding *glauca* as a synonym of *rosae* L.

Myzus gracilis Buckton = ***Metopolophium dirhodum*** (Walker)

Buckton, 1876 : 176; pl. 34, figs 4, 5.
(For synonymy, see Doncaster, 1961 : 58.)

LECTOTYPE here designated: alate viviparous female. Surrey, Shottermill. *Acer pseudoplatanus.* xi. (year ?). (*Buckton*). (*210**).

Paralectotype: alate male. Data as lectotype. (*210a**).

Biometric data. Lectotype, alata: body length 2·80 mm, antennal flagellum not measurable (both incomplete), ratios of segments III-base VI 73 : 48 : 46 : 22 + ?, secondary rhinaria on III 21, siphunculus 0·41 mm, cauda 0·23 mm, caudal hairs 9, ultimate rostral segment 0·11 mm, second segment of hind tarsus 0·17 mm, eighth tergite with 4 hairs, articular diameter of ant. seg. III 32μ, longest hair on ant. seg. III 12μ, on hind femur 24μ, on hind tibia 40μ, on eighth tergite 55μ.

Buckton describes and figures the alate viviparous female and alate male, which he records as having been taken on sycamore 'in company with *Chaitophorus aceris*' in November. (In the legend to the plate the male, fig. 4, is mistakenly ascribed to *ribis*.) Buckton's original slide, named *Myzus gracilis*, contained the alate female and alate male, which correspond with his text and figures and which I regard as his types, together with four larvae of *Periphyllus acericola* (Walker). All have been remounted.

Rhizobius graminis Buckton = ***Aploneura lentisci*** (Passerini)

Tetraneura lentisci Passerini, 1856 : 264.
Aploneura lentisci (Passerini) Passerini, 1863 : 201.
[*Tychea eragrostidis* (Passerini ?) Buckton, 1883 : 89, partim. Misidentification.]
Rhizobius poae Buckton, 1883 : 93, nec Thomas, C. A., 1879 : 166.
Rhizobius graminis Buckton, 1883: note below legends to pl. 129.
Tycheoides eragrostidis Schouteden, 1906*a* : 194.
Neorhizobius poae del Guercio, 1917 : 247.

LECTOTYPE here designated: apterous viviparous female. Northumberland, Cheviot Hills. *Poa annua* roots. Undated. (*Hardy* ?). (*358*).

Paralectotypes: 7 apterous viviparous females. Data as lectotype. (*358*).

Biometric data. Lectotype, aptera: body length 1·56 mm, whole antenna 0·25 mm, ratios of segments I–V 14 : 15 : 10 : 10 : 29, ultimate rostral segment 0·085 mm, second segment of hind tarsus 0·080 mm, longest hair on antenna 12μ, on hind femur 14μ, on hind tibia 14μ, on eighth tergite 24μ, on cauda 24μ.

Buckton first describes this species as *Rhizobius poae* in the fourth volume of his monograph, but after the text had been printed he discovered that the name had already been published by Cyrus Thomas for an American species in 1879. He therefore concedes priority to *poae* Thomas and substitutes *graminis* for his own species in a note added below the figure legends for plate 129.

Buckton's slide (*358*, still labelled '*poae*') contains eight apterous females of *Aploneura lentisci* (Passerini) and four apterae of a *Pemphigus* species, all reasonably well preserved. He figures both these species, *lentisci* in figs 9 and 11, and the

Pemphigus in 10 and 12. The original sketch for fig. 9 is a careful and accurate drawing of the adult aptera of *lentisci*, and his published description corresponds closely with it. The sketch of the *Pemphigus* is rough and shows the ventral aspect only. I therefore place *graminis* Buckton as a synonym of *lentisci* Passerini. Buckton's sketch for figure 9 can be matched fairly closely with one of the specimens of *lentisci* on *358*, and this I regard as Buckton's type of *graminis*.

The mixture of species on Buckton's slide and in his figures of *graminis* led Theobald (1929 : 213, 262, 265) to synonymize *graminis* with *auriculae* Murray (*Pemphigus*) and also, doubtfully, with *lentisci*. Records by Theobald (1915 : 151), Willcocks (1922 : 58, 1925 : 122) and Hall (1926 : 47) of *graminis* Buckton on roots of Gramineae in Egypt all refer to *lentisci*.

Pemphigus immunis Buckton

[*Pemphigus bursarius* (L.); Passerini, 1863 : 198, Courchet, 1879 : 49, 93, pl. 5, fig. 4, Buckton, 1881 : pl. 113, figs 6–8, Kessler, 1882 : pl. 1, figs 2–5, Lichtenstein, 1885 : pl. 3, figs 1, 2, 1886 : 26, del Guercio, 1900 : 98. Misidentifications.]

Pemphigus immunis Buckton, 1896 : 51.

Pemphigus lichtensteini Tullgren, 1909 : 148.

Pemphigus globulosus Theobald, 1915 : 147.

[*Pemphigus napaeus* Buckton; Tseng & Tao, 1936 : 168, Takahashi, 1938 : 14. Misidentifications.]

Lectotype (designated by Doncaster, 1969 : 159): alate viviparous female (fundatrigenia migrans). INDIA, Kashmir, Gilgit Road, Bunji. c. 1400 m. *Populus ?euphratica*. 2.vii.1895. (*Alcock*). (BMNH *217**).

Paralectotypes: 1 alate viviparous female (fragmentary), 4 nymphs. Data as lectotype. (BMNH *217**, *219**). 1 alate viviparous female, 5 nymphs, 2 larvae (some fragmentary). Data as lectotype. (Zoological Survey of India, Calcutta, 7262/H7*, 7263/H7*).

I have already dealt elsewhere (Doncaster, 1969) with Buckton's Indian material of *immunis*, including descriptions of lectotype and paralectotypes.

It is interesting to note that when Buckton described *immunis* as new in 1896 he already had material of this species in his collection and had included in his monograph figures of the fundatrix, the antenna of the alate migrant, and the gall (Buckton, 1881 : pl. 113, figs 6-8). The specimens had been sent to him from Montpellier by Lichtenstein who believed them to be *bursarius*, and some of them that Buckton mounted, including those he drew, are still extant, though not the gall. The aphids comprise a fundatrix, whole specimens and fragments of eight or nine nymphs, and an alate migrant (*78a**, *78b**, *79*). In Buckton's published description of *bursarius* (1881 : 117), and his figures of it on plate 111, based on British material, he is correct in his identifications of specimens and galls, but includes his figures of *immunis* in a subsequent plate (113) and repeats Lichtenstein's error in ascribing them to *bursarius*. Buckton's original sketch of the gall of *immunis* gives a better impression of its colour, texture and position on the twig than the published lithograph.

Though widely distributed throughout the palaearctic and temperate oriental regions, *immunis* has not hitherto been recorded in Britain.

Aphis instabilis Buckton = ***Brachycaudus cardui*** (L.)

Aphis cardui L., 1758 : 452. (Linnaeus left no aphid types.)
Aphis instabilis Buckton, 1879 : 94; pl. 68, figs 1–5. **Syn. n.**

LECTOTYPE here designated: alate viviparous female. Surrey, Haslemere, Weycombe. *Matricaria inodora.* 18.vi.(year ?). (*Buckton*). (*220*).

Paralectotypes: 3 alate viviparous females, 9 nymphs, 1 larva. Data as lectotype. (*220*).

Biometric data. Lectotype, alata: Body length 1·56 mm, antennal flagellum 1·46 mm, ratios of segments III–VI 58 : 38 : 28 : 14 + 46, secondary rhinaria on III 30, siphunculus 0·30 mm, cauda 0·12 mm, caudal hairs 6, ultimate rostral segment 0·19 mm, second segment of hind tarsus 0·14 mm, articular diameter of ant. seg. III 26μ, longest hair on ant. seg. III 12μ, on hind femur 22μ, on hind tibia 30μ, on eighth tergite ±50μ.

Buckton describes the apterous viviparous female, two varieties of the nymph, and the alate female of *instabilis*, which he collected from *Pyrethrum inodorum* (now *Matricaria inodora*) and also *Epilobium montanum* and *E. parviflorum*. His manuscript notes suggest that material from both *Matricaria* and *Epilobium* was collected at Weycombe, but in his published account he mentions having received material from *Epilobium* from Barrett in Pembroke. Buckton's figures, and especially his original sketches, suggest that *instabilis* is based on at least two species, but his data are confusing. There are no specimens named *instabilis* in Buckton's collection. There is, however, a slide (*220*), unnamed but labelled 'Pyrethrum. June.' in Buckton's hand, which Theobald examined and believed to contain *instabilis.* It contains alatae, nymphs and a larva of *Brachycaudus cardui* (L.), correctly identified by Laing who, however, in a note on the slide envelope, doubted whether they were in fact *instabilis.* Nevertheless, Buckton's drawing of the nymph in figure 3 and that of the larger and darker of the two alatae (figure 4) seem to relate to his MS notes on specimens from *Matricaria*, dated June 18, in which case the alatae and nymphs of *cardui* on *220* could supply the models, as Theobald surmised. But the alata in figure 5, said to be newly emerged, is clearly something different. Apart from its pale green colour, its cauda is too big for *cardui* and, in the original, though not the reproduced figure, marginal tubercles are clearly indicated on the seventh abdominal segment, characters which suggest that it may have been either a vagrant, or taken from among material from *Epilobium.*

Buckton's drawings of the aptera (perhaps drawn from a larva—the measurements he gives are small for an adult) and 'var. 1' of the nymph (figures 1 and 2) certainly do not look like *cardui* and could well be of an *Epilobium*-feeding aphid. He describes the siphunculi of both morphs as pale, and notes the presence in the aptera of two small tubercles on the antepenultimate abdominal segment: characters which also could be appropriate to such species. But although specimens of some *Epilobium*-feeders occur in Buckton's collection, they include none that I can relate with any confidence to *instabilis*. There is one slide (*163*) labelled 'Epilobium. Pembroke.', containing apterae and alatae of *grossulariae* Kaltenbach, which I believe to be material sent by Barrett, but I regard these as the types of *penicillata* Buckton for reasons given below (p. 76). Since the only specimens that can clearly be related to *instabilis* are those from *Matricaria*, I place *instabilis* as a synonym of *cardui* L.

Theobald quotes Buckton's description of *instabilis* twice, once under *Aphis* (1927 : 214) and again under *Anuraphis* (1927 : 289), but does not recognize it as *cardui*. Börner (1952 : 231) thinks it likely to be an *Epilobium*-feeding species but does not identify it.

Rhizobius jujubae Buckton

Buckton, 1883 : 181, 1899*b* : 277.

Laing (1923 : 247) identifies *jujubae* Buckton as '. . . a very young and immature species belonging to the Monophlebinae' (Margarodidae). The single slide of *jujubae*, labelled simply '*Zizyphus jujuba*, India' in Buckton's hand, is in the Coccoidea collections of the BMNH.

Aphis lentiginis Buckton = ***Dysaphis (Pomaphis) plantaginea*** (Passerini)

Aphis pyri Hartig, 1841 : 369, nec Boyer de Fonscolombe, 1841 : 189.
[*Aphis malifolii* sensu auctt. nec Fitch, 1855 : 49. Misidentifications.]
Myzus plantagineus Passerini, 1860 : 31, 35. [No type exists[2].]
Myzus mali Ferrari, 1872*b* : 221.
[*Aphis mali* F.; Buckton, 1879 : 45, partim. Misidentification.]
Aphis lentiginis Buckton, 1879 : 59, pl. 55, fig. 1. **Syn. n.**
[*Dentatus sorbi* (Kaltenbach) van der Goot, 1915 : 177. Misidentification.]
Anuraphis roseus Baker, 1920 : 5.
Dentatus plumbicolor Nevsky, 1929 : 287.
Sappaphis plantaginea (Passerini) Hille Ris Lambers, 1945 : 58, 1948 : 287, Stroyan, 1957*a* : passim.
Sappaphis mali (Ferrari) Börner, 1952 : 98.
Dysaphis (*Pomaphis*) *plantaginea* (Passerini) Stroyan, 1963: passim.

LECTOTYPE here designated: apterous viviparous female (fundatrigenia). Sussex, Horsham, Cowfold. *Pyrus communis*. 8.vi.(year ?). (*Borrer*). (*373d**).

Paralectotypes: 3 apterous viviparous females. Data as lectotype. (*373a**, *b**, *c**).

BIOMETRIC DATA. Lectotype, aptera: body length 2·42 mm, antennal flagellum 1·89 mm, ratios of segments III–VI 58 : 42 : 27 : 13 + 49, siphunculus 0·37 mm, cauda 0·14 mm, caudal hairs 6, ultimate rostral segment 0·15 mm, second segment of hind tarsus 0·14 mm, eighth tergite with 5 hairs, articular diameter of ant. seg. III 34μ, longest hair on ant. seg. III 13μ, on hind femur 34μ, on hind tibia 46μ, on eighth tergite 76μ.

Buckton describes and figures the apterous and alate viviparous females of *lentiginis*, said to have been taken on pear in early June. His manuscript notes on the original sketches are dated 8 June. There are no specimens named *lentiginis* among Buckton's slides, but a slide (373) labelled '*A. Pyraria.* Cowfold. On Pear.' contained apterous and alate specimens (now remounted) which agree closely with his description and figures and which I believe to be his types of *lentiginis*. They are four adult fundatrigeniae of a *Dysaphis* species, either identical with or closely related to *plantaginea* (Passerini), and three alatae of *Rhopalosiphum insertum* (Walker). The four apterae are well preserved and were identified on the original slide by both Laing and Theobald as *Anuraphis roseus* Baker (= *plantaginea* Passerini), though neither connected them with *lentiginis*. Stroyan's (1957) keys for the identification of *Dysaphis* species bring one to the same conclusion, but doubts arise if one accepts Buckton's record that the aphids were taken on pear, since *plantaginea* is confined to apple as primary host.

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[2] See Stroyan, 1957*a* : 25.

If pear was indeed the host there might be grounds for regarding *lentiginis* as a 'good' species, since I know of no *Dysaphis* species resembling *lentiginis* that has been recorded on pear in England. It would be tempting to put forward the possibility that *lentiginis* may be the primary host form of *gallica* Hille Ris Lambers, a *Dysaphis* species closely similar in micromorphology to *plantaginea*, the primary host of which is not at present known. But this would seem unlikely since Hille Ris Lambers (1955 : 309) failed in attempts to establish autumn migrants of *gallica* on pear.

Buckton names his species *lentiginis* on account of two coloured areas on the dorsum surrounding the bases of the siphunculi. He mentions them twice, describing them first as 'conspicuous orange-yellow spots' and later as 'rusty blotches'. In his original sketch of the aptera they are shown as dull coppery red, but in the reproduced figure they are coloured bright yellow. The apterae of some species of *Dysaphis* do have reddish or brownish areas at the base of the siphunculi which might be matched with the dull red in Buckton's sketch, but I know of none in which these areas are orange or yellow. Buckton's inconsistency on this point may well raise doubts as to the usefulness of these areas taxonomically, at least in the case of *lentiginis*. Moreoever, Dr F. Leclant tells me (in correspondence) that their presence in other species is variable and that he has noticed them in specimens that are about to moult.

There seems in fact to be no reliable support for the view that *lentiginis* might be a 'good' species apart from Buckton's host record, which cannot be substantiated. Buckton's host identifications are often unreliable and in this instance, moreover, there is added uncertainty in that he did not collect the material himself, but received it from his friend Borrer at Cowfold. I therefore place *lentiginis* Buckton as a synonym of *plantaginea* Passerini.

Siphonophora longipennis Buckton = ***Metopolophium dirhodum*** (Walker)

Buckton, 1876 : 146; plate 20 bis.

(For synonymy, see Doncaster, 1961 : 58.)

LECTOTYPE here designated: alate viviparous female. Norfolk, Norwich. *Poa annua*. 1.xi.(year ?). (*Barrett*). (270*).

Paralectotypes: 1 alate male, 1 nymphal male. Data as lectotype. (*270**).

Biometric data. Lectotype, alata: body length 2·70 mm, both antennae from middle of segment III to apex missing, siphunculus 0·38 mm, cauda 0·24 mm, caudal hairs 13, ultimate rostral segment 0·11 mm, second segment of hind tarsus not measurable (both tarsi malformed), eighth tergite with 7 hairs, longest hair on hind femur 30μ, on hind tibia 35μ.

Buckton describes the apterous and alate viviparous females, the nymph and the alate male but figures only the last three morphs. The only specimens named *longipennis* by him consist of an alate viviparous female, an alate and a nymphal male of *Metopolophium dirhodum* (Walker), and an alate viviparous female of *Myzus persicae* (Sulzer). The slide is labelled 'Poa annua. Nov. 1.', which agrees with the heading to the manuscript notes on Buckton's original sketches, where the locality is given as Norwich and the collector Barrett. These notes describe only the morphs figured, of which the alate female and nymph are doubtless taken from those morphs on *270*. But although an alate male of *dirhodum* is present in the sample, Buckton's description and figure of the male *longipennis* relate to the alate female of *persicae*. The characteristically porrected antennal tubercles and abdominal markings of *persicae*, mentioned in his description, are clearly depicted in the original sketch (though less clearly in the reproduction), and the published measurement of siphuncular length agrees better with that specimen than with the male *dirhodum*.

I choose the alate female as lectotype of *longipennis*, which name has already been widely accepted as a synonym of *dirhodum* (Walker).

Theobald (1913 : 118) places *longipennis* Buckton in *Macrosiphum*. He gives a fuller description of the apterous viviparous female, from *Poa annua* in Cumberland, but quotes Buckton's account of the other morphs. He moves *longipennis* into *Myzus* in his monograph (Theobald, 1926 : 354). Hille Ris Lambers, who saw Theobald's material of *longipennis*, but not Buckton's, identified it with *dirhodum* (H.R.L., 1933 : 175), and subsequent authors have done likewise.

Siphonophora lutea Buckton = ***Macrosiphum (Sitobion) luteum*** (Buckton)

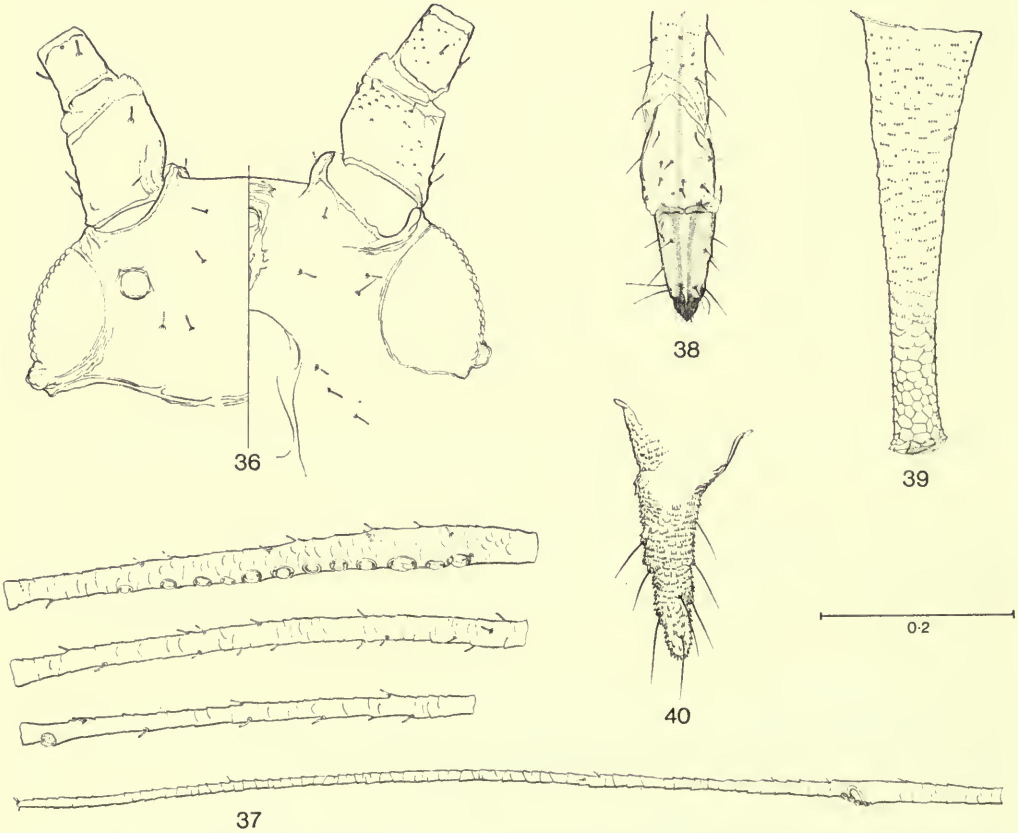
(Pl. 5, fig. 63; Text-figs 36–40)

Siphonophora lutea Buckton, 1876 : 119; pl. 8, figs 1–4.
Macrosiphum luteum (Buckton) Schouteden, 1901 : 114.
Macrosiphoniella lutea (Buckton) del Guercio, 1911 : 332.
Macrosiphum luteum (Buckton); Theobald, 1913 : 82.
Macrosiphum luteum (Buckton); Laing, 1919 : 273.
Macrosiphoniella lutea (Buckton); Theobald, 1926 : 169.
Macrosiphum (*Sitobion*) *luteum* (Buckton); Hille Ris Lambers, 1939 : 118.
Macrosiphum luteum (Buckton); Wolcott, 1948 : 155.
Sitobium (*Sitobium*) *luteum* (Buckton) Börner, 1952 : 164.
Macrosiphum (*Sitobium*) *luteum* (Buckton) Ossiannilsson, 1959 : 494.
Sitobion luteum (Buckton); Smith et al., 1963 : 88.
Macrosiphum (*Sitobion*) *luteum* (Buckton); Kloet & Hincks, 1964 (I) : 82.
Macrosiphum (*Sitobion*) *luteum* (Buckton); Eastop, 1966 : 458.
Macrosiphum(*Sitobion*) *luteum* (Buckton); Mamet, 1967 : 63.
Macrosiphum (*Sitobion*) *luteum* (Buckton); Ghosh & Raychaudhuri, 1968 : 184.

LECTOTYPE here designated: alate viviparous female. Surrey, Carshalton. Orchidaceae. 22.i.(year ?). (*Smee*). (*271**).

Paralectotypes: 1 apterous viviparous female, 1 nymph. Data as lectotype. (*271a**, *271b**).

Alate viviparous female. (Plate 5, fig. 63; Text-figs 36–40). *Colour* of macerated specimen: the insect shows signs of being teneral and is uniformly pale, with only very slight darkening of lateral abdominal sclerites, muscle-plates, siphunculi and femoral apices. *Morphology:* body about 2·5 mm long, slender, nearly three times as long as broad. Head smooth, antennal tubercles distinct but not prominent. Cephalic hairs sparse, up to 20µ long, with blunt or slightly expanded apices. Antennal segments I and II smooth except for a few scattered spinules on the ventral surface, remaining segments lightly imbricated; III with 12 and 16 circular secondary rhinaria arranged in line over a little more than three-quarters of the segment; antennal hairs blunt, short, reaching about 16µ on III, i.e. a little less than half its articular diameter; processus terminalis about 5·5 times as long as base of segment VI; the whole flagellum about equal to the body length; ratios of segments III to VI 56 : 53 : 47 : 15 + 85. Rostrum about 0·65 mm in length, apical segment bluntly triangular, 0·12 mm long, scarcely longer than



Figs 36–40. *Macrosiphum* (*Sitobion*) *luteum* (Buckton). Lectotype: Fig. 36. Head, upper (left) and lower surfaces. Fig. 37. Antennal segments III–VI. Fig. 38. Apex of rostrum (penultimate segment fractured). Fig. 39. Siphunculus. Fig. 40. Cauda.

second segment of hind tarsus and with six non-apical hairs. Legs long and slender; hind femur about one-third of body length, with sparse, small, spiny hairs reaching 18μ in length; tibial hairs similar, more numerous, up to 30μ long. Fore tarsi missing; first segments of middle and hind tarsi each with three hairs. Three pairs of lateral abdominal sclerites are visible on segments II to V, each more or less oval, furnished with a few spinules and one small papilla; also present on each side are a small antesiphuncular sclerite and a large postsiphuncular sclerite. Paired muscle-plates occur on I–VI. Abdominal tergum smooth, hairs sparse, short—up to 18μ on the median area—blunt or with slightly expanded apices; eighth tergite with four hairs, the longest about 32μ. Siphunculi 0·45 mm long, broad at the base which is 3–4 times the narrowest diameter, and tapering towards the slightly flared apex; reticulated over the apical one-fifth to one-quarter, the remainder with a few imbrications and small groups of spinules. Cauda elongate, 0·25 mm long, slender, a little more than half as long as the siphunculi, with eight hairs.

Apterous viviparous female. This specimen, like the alata, has suffered in remounting, many of the appendages having become detached and some of their extremities lost. It appears to be more mature, with colour characters more pronounced, than the lectotype. Antennal segment III, except for its very base, is dark sclerotic, and the subsequent segments become progressively paler. Also dark sclerotic are the siphunculi and middle and hind femoral apices; the tibiae are paler. The characteristic oval, dark sclerotic patch on the abdominal dorsum between segments I and V shows clearly.

NOTES. Buckton describes the apterous viviparous female, nymph and alata. His manuscript notes give the date 22 January but add nothing further to his published data. In this instance his published figures render the colours and forms of his original sketches reasonably faithfully. His sketch of the alata, presumably drawn from life and perhaps from a specimen more mature than the lectotype, shows the siphunculi black, and the antennae, apices of femora and tibiae, and the tarsi dark. He indicates what appear to be darkened muscle-plates but shows no lateral abdominal sclerites.

A full account of *luteum* is given by Hille Ris Lambers (1939 : 118).

Lachnus macrocephalus Buckton = ***Cinara pinicola*** (Kaltenbach)

Buckton, 1881 : 48; pl. 97, figs 1, 2.

LECTOTYPE here designated: alate male. West Sussex, Bramshott. *Picea abies.* Bred from nymph 26.vii.(year ?). (*274*).

Paralectotypes: 1 alate male, 1 nymph. Data as lectotype. (*274*).

BIOMETRIC DATA. Lectotype, alate male (abdomen shrivelled): body length 1·62 mm, antennal flagellum 0·96 mm, ratios of segments III–VI 56 : 21 : 22 : 21, siphuncular pore diameter 0·05 mm, basal diameter 0·21 mm, ultimate two rostral segments 0·27 mm, second segment of hind tarsus 0·32 mm, articular diameter of ant. seg. III 20μ, longest hair on ant. seg. III 80μ, on vertex 70μ, on hind femur 90μ, on hind tibia ±150μ.

Buckton describes the apterous viviparous female, nymph and alate male, but figures only the two latter morphs under the name *macrocephalus*. He records (p. 50) that apterae were sent to him from spruce at Walthamstow in June and that he found the same aphid in July at Bramshott, also on spruce. Winged males from the Bramshott sample matured on 26 July. His sheet of sketches contains drawings of an apterous female, ascribed to Walker and dated June 29, which I take to be one of the Walthamstow specimens, and also sketches of an alate male and a nymph, described in his MS notes as 'numerous July 20 on the spruce fir, Bramshott'. The sketches of nymph and alata have been used for the figures of *macrocephalus* (figs 1 and 2), but the sketch of the aptera is used for figure 3, on the same plate, to illustrate *pini* L., and again for figure 1, plate 5, in his subsequent paper (Buckton, 1886) where he deals with the same species.

Buckton's original slide (*274*), labelled '*Lachnus macrocephala*. Bramshot.' (*sic*) contains two alate males, a nymph and an ovipara of *Cinara pinicola* (Kaltenbach). One of the alate males and the nymph are doubtless the models for the two figures of *macrocephalus*, but I strongly suspect that the ovipara has been made to play a double role. The close correspondence of its characters and measurements with the published description suggest that it formed the basis for the 'apterous viviparous female' of *macrocephalus*. At the same time its attitude closely resembles that of the sketch for figure 3, which is drawn on the same sheet with *macrocephalus* and was perhaps at first accepted by Buckton as that species, but a pencilled note beside it suggests that he changed his mind and later referred it to *pini* L. This, and its ascription to Walker, lead me to exclude this specimen from the type-series and to choose as lectotype an alate male from the Bramshott sample.

Chaitophorus maculatus Buckton = ***Therioaphis trifolii*** (Monell)

(Text-fig. 41)

Callipterus trifolii Monell, 1882 : 14.
Chaitophorus maculatus Buckton, 1899*b* : 277.
Callipterus genevei Sanborn, 1904 : 38.
Callipterus trifolii Monell; Davis, 1914*b* : 17.
[*Callipterus ononidis* (Kaltenbach) Theobald, 1915 : 134. Misidentification.]
Callipterus trifolii Monell; Das, 1918 : 244.
[*Therioaphis ononidis* (Kaltenbach); Theobald, 1927 : 364.]
[*Therioaphis ononidis* (Kaltenbach); Nevsky, 1929 : 316.]
[*Myzocallis ononidis* (Kaltenbach); Hottes & Frison, 1931 : 258.]
Myzocallis trifolii (Monell) Gillette & Palmer, 1931 : 892.
Myzocallis trifolii (Monell); Tseng & Tao, 1936 : 161.
Therioaphis collina Börner, 1942 : 273.
Pterocallidium maculatum (Buckton) Börner, 1949 : 49, 1952 : 63.
Pterocallidium lydiae Börner, 1949 : 49, 1952 : 63.
Pterocallidium propinquum Börner, 1949 : 49, 1952 : 63.
Pterocallidium trifolii (Monell) Quednau, 1954 : 35.
Therioaphis maculata (Buckton); Dickson et al., 1955 : 93.
Pterocallidium trifolii (Monell); Pintera, 1956 : 121.
Pterocallidium trifolii (Monell); Börner & Heinze, 1957 : 87.
Therioaphis (*Pterocallidium*) *maculata* (Buckton) Dickson, 1959 : 63.
Pterocallidium trifolii (Monell); Ossiannilsson, 1959 : 400.
Therioaphis trifolii (Monell); Hille Ris Lambers & van den Bosch, 1964 : 36–40.
Therioaphis trifolii (Monell); Richards, 1965 : 96.

LECTOTYPE here designated: apterous viviparous female. INDIA, Rajasthan, Jodhpur, Marwar. *Medicago sativa.* vi.1897. (Collector ?). (Zoological Survey of India, Calcutta, no. 6765/H7(a).)

Paralectotypes: 3 apterous, 4 alate viviparous females, 3 larvae. Data as lectotype. (Z.S.I. nos 6765/H7(b, c), 6766/H7(a-c), 6767/H7(a-e).)

Apterous viviparous female. (Text-fig. 41). *Colour:* nearly all traces of pigmentation lost during storage. *Morphology:* body oval, 1·66–1·83 mm long, about twice as long as broad. Head smooth, antennal tubercles absent, median frontal tubercle prominent, situated between two rather slender, slightly capitate hairs 0·33 mm long; above these a pair of stouter hairs of the same length; vertex with two stout hairs anteriorly and four shorter ones in a line parallel with the posterior border of the head. Antennal segment I smooth with three fine, acute, very short (14μ) hairs; II smooth with one similar hair; III sparsely spinulose, slightly thickened on basal two-fifths part which bears 6–8 round or transversely oval rhinaria with thick rims. Hairs on III scarcely discernible, apparently acute, 8–10μ long, i.e. up to about half the articular diameter of the segment. No adult specimen among those examined has a complete antenna: that of a last-stage nymph (on same slide as lectotype) has length ratios of segments III–VI 100 : 59½ : 61 : 41½ + 40. Rostrum short, reaching only slightly beyond the fore coxae, apical segment 0·085 mm long, bluntly conical, about two-thirds as long as second segment of hind tarsus. Legs normal, except fore coxae which are very large, nearly 1½ times as wide at base as middle and hind coxae. Femoral hairs acute, short (12–16μ), tibial hairs acute, longer (35–40μ maximally). First tarsal segments with seven hairs, two dorsal and five ventral. Dorsal body hairs from about 35μ to 62μ long, the majority about 50μ, with stout cylindrical stem, apex expanded, fan-shaped in outline. Abdominal tergites with one pair each of spinal, pleural and marginal hairs; an accessory spinal hair is present on each of tergites I–V, giving seven hairs per tergite; VI has six hairs, VII has five, and VIII has four. Siphunculi short (0·05 mm), smooth, without flange. Cauda 0·15–0·19 mm long, knob oval, with 9–12 hairs.

Alate viviparous female. Colour: all pigment lost except in lateral abdominal sclerites, which are brownish, and the stigma of the fore wing, which shows faint traces of pigmentation.

Morphology: similar to aptera, but dorsal body hairs shorter; of those that are present and measurable, most are about half as long as the corresponding hairs in the aptera. Lateral sclerites present on abdominal segments II–V, rounded, slightly protuberant, those on II scabrous, wart-like. Antennal segment III with 6–8 secondary rhinaria on basal part, occupying from 0·42 to 0·44 of its total length.

NOTES. The morphological similarities between *maculata* Buckton and the yellow clover aphid, *Therioaphis trifolii* (Monell), are so close that most authors from Davis (1914) onwards have regarded the two species as identical. Dickson (1959), however, found characters by which he could separate populations of yellow clover aphid (YCA) on *Trifolium* spp. from populations of what had come to be known as spotted alfalfa aphid (SAA) on *Medicago* spp. in North America, and proposed that the latter aphid should be called *maculata* Buckton. The two characters which Dickson used to distinguish SAA from YCA were the area of the third antennal segment occupied by secondary rhinaria (less than half in SAA, more than half in YCA), and the presence (in SAA) or absence (in YCA) of dark sclerotic 'dashes' on the underside of the abdomen. Miss L. M. Russell, who had examined some of Buckton's type material from Calcutta, confirmed, in a letter quoted by Dickson (1959), that the sensoriation of antennal segment III in *maculata* agreed with that of North American SAA, and comparison of the ventral sclerotization showed that the 'dashes', though much bleached from long storage, were present but smaller and narrower than those of North American specimens. In the lectotype and paralectotypes of *maculata*, which

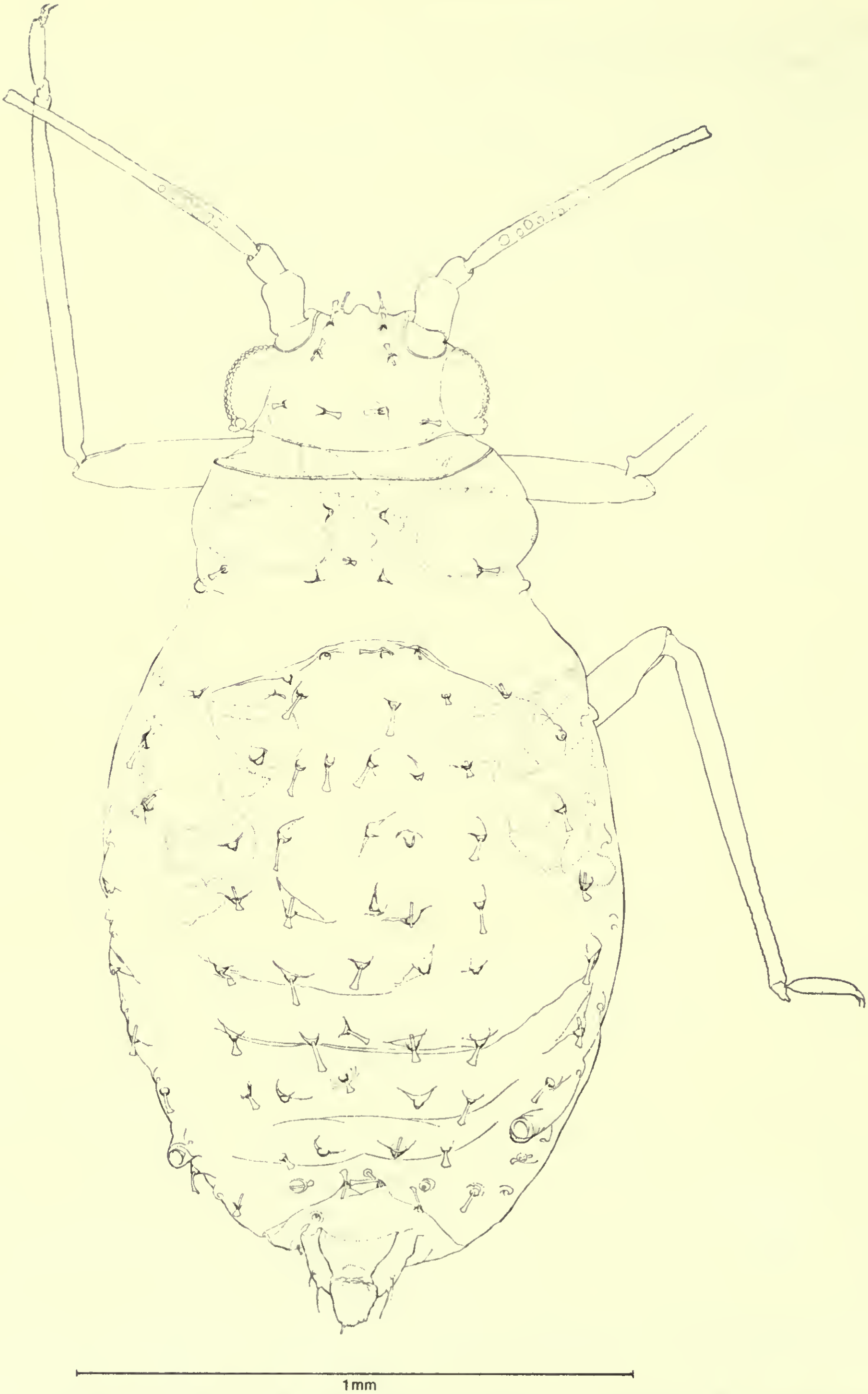


Fig. 41. *Therioaphis trifolii* (Monell) (*maculata* Buckton). Lectotype: whole insect to show dorsal chaetotaxy, etc. (Right fore tibia and tarsus and smaller hairs omitted.)

I have examined but which Miss Russell did not see, the sensoriation of antennal segment III agrees with the specimens she did examine and with Dickson's SAA, but in none can I discern any sign of ventral 'dashes', even in alatae. This does not prove their absence, but could be due partly to bleaching and partly to many of the finer cuticular structures being obscured by contained embryos.

Hille Ris Lambers and Van den Bosch (1964) sum up our present knowledge on this subject in the light of information gained from breeding and transfer experiments. They conclude that although Dickson's characters are valid for separating YCA and SAA in North America, where the entire populations of both aphids may each have sprung from single introduced individuals or clones, these differences fall well within the normal limits of variability of *trifolii* alone in other parts of the world. YCA and SAA are thus merely two varieties of *trifolii* Monell, under which name *maculata* Buckton falls as a synonym.

Hyalopterus melanocephalus Buckton = ***Hayhurstia cucubali*** (Passerini)

Aphis cucubali Passerini, 1863 : 170, *nec* Linnaeus, 1746 : 218.
Aphis silenea Ferrari, 1872*a* : 72.
Hyalopterus melanocephalus Buckton, 1879 : 116; pl. 77, figs 5–7.
Hyalopterus melanocephalus Buckton; Theobald, 1927 : 30.
Semiaphis cucubali (Passerini) Hille Ris Lambers, 1934 : 25.
Brachycolus melanocephalus (Buckton) Hille Ris Lambers, 1950 : 41.
Hayhurstia cadiva (Walker) Börner, 1952 : 109.
Hayhurstia cucubali (Passerini) Kloet & Hincks, 1964 (I) : 76.

LECTOTYPE here designated: apterous viviparous female. Norfolk, Norwich, Brandon. *Silene cucubalus* (syn. *inflata*). 13.viii.(year ?). (*Barrett* ?). (*283*).

Paralectotypes: 1 apterous viviparous female, 2 nymphs, 2 larvae. Data as lectotype. (*283*). 5 apterous, 2 alate viviparous females. Surrey, Haslemere, Weycombe. *Silene cucubalus*. vii.(year ?). (*Buckton*). (*282**).

BIOMETRIC DATA. Lectotype, aptera: body length 1·50 mm, antennal flagellum 0·64 mm, ratios of segments III–VI 25 : 11 : 12 : 11 + 21, siphunculus 0·06 mm, cauda 0·14 mm, caudal hairs 7, ultimate rostral segment 0·08 mm, second segment of hind tarsus 0·12 mm, eighth tergite with 5 (?) hairs, articular diameter of ant. seg. III 16μ, longest hair on ant. seg. III 10μ, on hind femur 16μ, on hind tibia 30μ, on eighth tergite 26μ.

Buckton records *melanocephalus* from Haslemere and Brandon, near Norwich. His manuscript notes indicate that he received the Brandon material first, and took from it an aptera and a nymph as models for figures 5 and 6. These are dated 13 August, and the specimens were probably collected by Barrett. Buckton's description and sketch of the alata are based on specimens he took subsequently at Haslemere. All his material is *cucubali* Passerini.

Siphonophora menthae Buckton = ***Aulacorthum solani*** (Kaltenbach)

Buckton, 1876 : 120; pl. 9, figs 1, 2.

LECTOTYPE here designated: apterous viviparous female. Surrey, Haslemere. *Mentha spicata* (syn. *viridis*). vii.(year ?). (*Buckton*). (*284d**).

BIOMETRIC DATA. Lectotype, aptera: body length 2·60 mm, antennal flagellum not measurable (both processi incomplete), ratios of segments III–V 30 : 25 : 16 : ?, secondary rhinaria on III 2 and 1, siphunculus 0·64 mm, cauda 0·25 mm, caudal hairs 7, ultimate rostral segment 0·15 mm, second segment of hind tarsus 0·13 mm, eighth tergite with 6 hairs, articular diameter of ant. seg. III 40μ, longest hair on ant. seg. III 10μ, on hind femur 18μ, on hind tibia 40μ, on eighth tergite 40μ.

Buckton's original slide of *menthae* contained two alatae and two larvae of *Ovatus crataegarius* (Walker), an alate *Myzus persicae* (Sulzer), and an apterous *Aulacorthum solani* (Kaltenbach), all now remounted. He describes and figures the apterous and alate viviparous females of *menthae*. Both the figure of the aptera (fig. 1) and Buckton's original sketch on which it is based show an aphid of form and colouring typical of *Aulacorthum solani*, and I have little doubt that the aptera from his slide is his type of the aptera of *menthae*. There is less certainty about the identity of the alata he described and figured, but there are indications pointing to its being *persicae* rather than *crataegarius*. The original sketch shows a predominantly green aphid with black antennae, siphunculi and lateral abdominal sclerites. The antennae are about the right proportionate length for *persicae*, the cauda is pale, and the siphunculi are slightly but distinctly clavate. The abdomen, however, is without the dark dorsal patch and transverse bands characteristic of *persicae*. The published description, however, does mention 'some specimens' with 'disjointed transverse bars on the abdomen'.

Subsequent authors have not unnaturally assumed that when he described *menthae* Buckton had before him the small pale aphid found on mint that Walker (1850) first described as *crataegarius* (and later (1852) also as *menthae* and *melissae*). This assumption is supported by Theobald (1926 : 279), who knew that Buckton's slide contained *crataegarius* and who noted that it also contained an alate *persicae* and 'an apterous female *Myzus* sp.' (i.e. *solani*), but did not associate the latter two with Buckton's description and figures. Hille Ris Lambers was aware that Buckton's type of the apterous *menthae* was *solani*, and informed M. D. Leonard, who quoted the information in his paper on the distribution and habits of the mint aphid (Leonard, 1963 : 55). Kloet & Hincks (1964 (I) : 80) list *menthae* Buckton as a synonym of *solani* Kaltenbach.

Siphonophora muralis Buckton = ***Dactynotus muralis*** (Buckton)

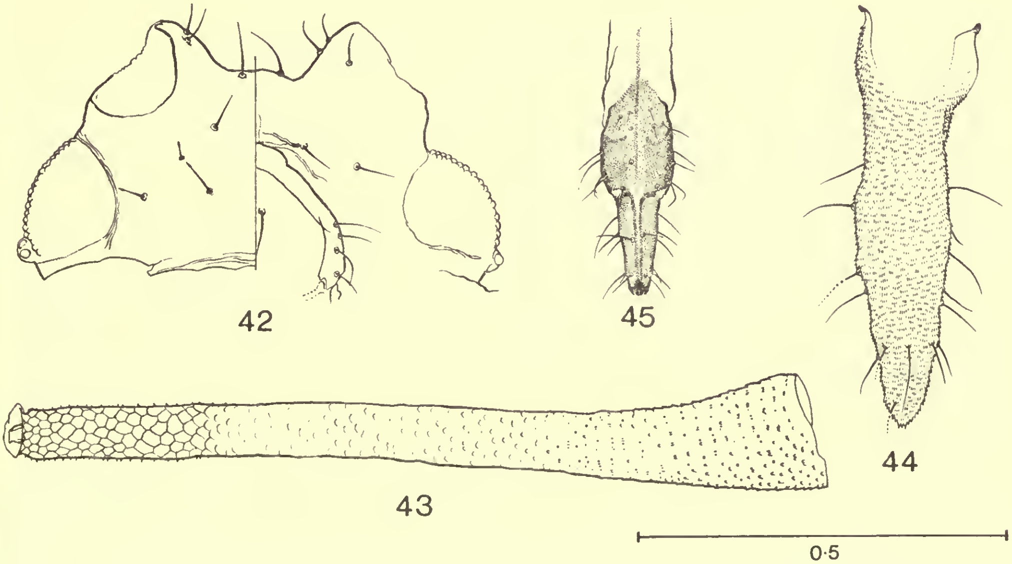
(Pl. 5, fig. 64; Text-figs 42–45)

Siphonophora muralis Buckton, 1876 : 157; pl. 26, figs 1–4, 7.
Macrosiphum muralis (Buckton) Theobald, 1913 : 70, 1926 : 91.
Dactynotus muralis (Buckton) Hille Ris Lambers, 1939 : 26.
Dactynotus muralis (Buckton); Börner, 1952 : 171.
Dactynotus muralis (Buckton); Ossiannilsson, 1959 : 503.
Dactynotus muralis (Buckton); Heie, 1960 : 194, 206.
Dactynotus muralis (Buckton); Tashev, 1964 : 163.

LECTOTYPE here designated: apterous viviparous female. Surrey, Haslemere, Weycombe. *Mycelis* (syn. *Lactuca*) *muralis*. 30.vi.(year ?). (*Buckton*). (*288a**).

Paralectotypes: 2 alate viviparous females, 1 nymph, 1 larva. Data as lectotype. (*288b**, *c**, *d**, *289*).

Apterous viviparous female. (Plate 5, fig. 64; Text-figs 42–45). (Description based on type only, an unusually large aptera with alatiform antennal sensoriation.) *Colour* of macerated specimen: head, rostrum most of antennae, pronotum and siphunculi dark brown. A large area on the mesonotum, the abdominal scleroites, anal and subgenital plates brown; apices of femora and tibiae, and the tarsi, more or less darkened. Remainder of body and appendages, including whole of cauda, pale. *Morphology:* body elongate-oval, 3·96 mm long, rather more than twice as long as broad. Head smooth with prominent antennal tubercles, dorsal hairs slender, with swollen apices, the longest reaching 55μ. Antennal flagellum 0·9 of body length, ratios of segments III–VI 89 : 74 : 69 : 19 + 100; antennal hairs spiny, blunt, up to 40μ long, not quite equal to articular diameter of third segment, which carries 40 rather small, round, secondary rhinaria distributed over nearly its whole length; fourth segment with 6 and 7 rhinaria; processus terminalis five times as long as base of sixth segment. Rostrum reaching to, or only slightly beyond, middle coxae, apical segment short (0·14 mm), blunt, with 8 non-apical hairs. Legs long and slender, hind femur with rather sparse hairs, variable in length, the longest about 48μ; tibial hairs similar, reaching 50μ. First segments of tarsi with 5 hairs on all legs; second segment of hind tarsus 0·20 mm long. The dorsal abdominal hairs are nearly all carried singly on small scleroites; the spinal hairs are duplicated on the anterior segments where their maximal length reaches about 45μ; small lateral tubercles, each carried on a hair-bearing scleroite, are present on segments II–IV, or II–V; antesiphuncular sclerites are absent. Eighth tergite with 4 hairs, the longest about 70μ. Subgenital plate with 9 hairs along its posterior margin. Siphunculi 1·09 mm long, about one-quarter of the length of the body, cylindrical except for the expanded base, apical one-quarter reticulated, remainder lightly imbricated, flange small. Cauda 0·55 mm long, ensiform, slender, about three times as long as its basal width and half as long as the siphunculi, with 15 hairs.



FIGS 42–45. *Dactynotus muralis* (Buckton). Lectotype: Fig. 42. Head, upper (left) and lower surfaces. Fig. 43. Siphunculus. Fig. 44. Cauda. Paratype, alata (*288b*): Fig. 45. Apex of rostrum.

NOTES. Buckton describes and figures the apterous and alate viviparous females, the nymph, the alate male and the ovipara. The descriptions and figures of the first three morphs relate to *muralis;* those of the 'male' appear to be based on one of five alate females of *Myzus persicae* (Sulzer), which are included among Buckton's material of *muralis*, while the sketch of the 'ovipara' resembles a young larva of *muralis* present on *289*. His manuscript notes give the date as 30 June.

Pemphigus napaeus Buckton

Buckton, 1896 : 50.

Lectotype (designated by Doncaster, 1969 : 160): alate viviparous female, fundatrigenia. INDIA, Kashmir, Darkot Pass. c. 3,000 m. *Populus* sp. galls. (Date of collection and collector not known). (*292**).

Paralectotypes: fundatrix, nymph, 6 alate viviparous females. Data as lectotype. (*290**, *291**, *291a**, [*292a**], *293**, *294**).

I have already given an account of *napaeus* Buckton elsewhere (Doncaster, 1969 : 160). All the type material is in the BMNH except one alate fundatrigenia (*292a*) which is in the collection of Mr D. Hille Ris Lambers of Bennekom, Netherlands.

Siphonophora olivata Buckton = ***Dactynotus cirsii*** (Linnaeus)

Aphis cirsii Linnaeus 1758 : 452, Goeze, 1778 : 299, Gmelin, 1790 : 2205.
Aphis serratulae Kaltenbach, 1843 : 25.
[*Aphis sonchi* Linnaeus; Walker, 1848*a* : 197 partim. Misidentification.]
[*Siphonophora cichorii* Koch; Buckton, 1876 : 163 partim ? Misidentification.]
Siphonophora olivata Buckton, 1876 : 164; pl. 29, figs 3, 4.
Macrosiphum githargo Theobald, 1926 : 84 ?
Dactynotus marcatus Hille Ris Lambers, 1931*a* : 170.
Dactynotus olivatus (Buckton) Hille Ris Lambers, 1933 : 170.
Dactynotus cirsii (L.) Hille Ris Lambers, 1939 : 18.
Dactynotus cirsii (L.); Börner, 1952 : 170.

LECTOTYPE here designated: alate viviparous female. West Sussex, Linchmere. *Cirsium vulgare* (syn. *Carduus lanceolatus*). 14.viii.(year ?). (*Buckton*). (*298a**).

Paralectotypes: 2 apterous, 1 alate viviparous females. Data as lectotype. (*298b**, *c**, *d**).

BIOMETRIC DATA. Lectotype, alata: body length not measurable (that of paralectotype *298b* is 4·20 mm), antennal flagellum not measurable (both processi incomplete), ratios of segments III–base VI 59 : 45 : 39 : 9 + ?, secondary rhinaria on III 74, siphunculus 1·30 mm, cauda 0·68 mm, caudal hairs 27, ultimate rostral segment 0·25 mm, second segment of hind tarsus 0·21 mm, eighth tergite with 6 hairs, articular diameter of ant. seg. III 52μ, longest hair on ant. seg. III 50μ, on hind femur 65μ, on hind tibia 65μ, on eighth tergite 120μ.

Buckton describes and figures the apterous and alate viviparous females, collected on the flower stems of *Carduus lanceolatus* (now *Cirsium vulgare*) at Linchmere, Sussex, in mid-August. There were originally two slides named *olivata*, one (*297*) containing apterae and larvae of *Dactynotus cirsii* (L.) and labelled '*Carduus arvensis*. Aberdeen.', and another (*298*) with two apterous and two alate females, also of *cirsii*, from Linchmere. Buckton's manuscript notes accompanying his sketches of *olivata* refer only to the Linchmere sample and give the date 14 August. There is no mention of specimens from Aberdeen. I assume therefore that his description and figures relate only to the specimens on *298*. These could provide a model for the alate *olivata*, of which the characters given are consistent with those of *cirsii*, but not for the aptera, which Buckton describes and figures as having a black cauda, and the published measurements of which are too small for either of the apterae on *298* (or, for that matter, any of those in the Aberdeen sample). Buckton probably used for his model an aptera of another species which has since been lost.

Theobald (1913 : 79, 1926 : 82), who redescribes the species as *Macrosiphum olivatum*, also states that the cauda of the aptera is black, but adds the observation (1926 : 84) that the cauda is black in the larva but pale at the base in the adult. He also found one colony in which the cauda in adult apterae was almost entirely black. This suggests that he had encountered a colony of *Uromelan aenaeus* Hille Ris Lambers and provides a possible clue to the identity of Buckton's aptera. (Buckton's sketch, moreover, may have been made from a larva: the cauda is too small for a typical adult, and this would account for the small dimensions given in his published account.) Börner (1952 : 170, 172) comes to the same conclusion, and includes *olivata* as a synonym partly of *cirsii* and parly of *aenaeus*. Kloet & Hincks (1964 : 82, 83) do likewise.

Aphis opima Buckton = **Brachycaudus cardui** (L.)

Buckton, 1879 : 101; pl. 71, figs 1–4.

LECTOTYPE here designated: apterous viviparous female. Surrey, Haslemere, Weycombe. *Cineraria*, in greenhouse. Undated. (*Buckton*). (*301*).

Paralectotypes: 4 apterous viviparous females, 3 larvae. Data probably as lectotype. (*299, 301*). 2 apterous viviparous females, 1 larva. Data as lectotype, but dated December. (*303*). 2 apterous, 3 alate viviparous females. Sussex, Chichester. *Cineraria*, in greenhouse. 3.vi.(year ?). (*302*).

BIOMETRIC DATA. Lectotype, aptera: body length 2·10 mm, antennal flagellum 1·32 mm, ratios of segments III–VI 49 : 32 : 24 : 13 + 49, siphunculus 0·27 mm, cauda 0·11 mm, caudal hairs 5 (?), ultimate rostral segment 0·19 mm, second segment of hind tarsus 0·13 mm, eighth tergite with 7 hairs, articular diameter of ant. seg. III 28μ, longest hair on ant. seg. III 10μ, on hind femur 20μ, on hind tibia 50μ, on eighth tergite 80μ.

Buckton describes and figures the apterous and alate viviparous females which he took on *Cineraria* in greenhouses. There are four slides named *opima* by him (*299, 301, 302, 303*), containing several apterous and alate *Brachycaudus cardui* (L.) and a few *Myzus persicae* (Sulzer). Buckton's description of the aptera of *opima* includes an account of the later larval stages while the insect is still green, and one of these he illustrates in figure 1 (though calling it in the caption 'green variety of apterous female'). Figure 2 shows the fully adult aptera with its dark pigmentation. These figures and that of the alata (fig. 3) are all consistent with the characters of *cardui* and can be matched with specimens of *cardui* on *299*, *301* and *302*. There is, however, no extant specimen of an early-stage larva which corresponds to the uncoloured sketch used in figure 4.

Buckton records *opima* from Haslemere, Chichester and Wanstead. His notes and slide labels suggest that the apterae he described and figured came from his own greenhouse at Weycombe (April-September, 3 October, 30 November), the alatae were from Chichester (3 June), and a slide of Walker's, unnamed and labelled 'Cineraria. Walk., No. 2', which contains *Myzus persicae*, perhaps represents the Wanstead record.

Theobald (1927 : 287) includes *opima* Buckton in *Anuraphis* and quotes Buckton's description in full. He mentions Buckton's specimens (on five slides, now numbers *299–303*), which Laing had correctly identified as *cardui* and *persicae*, and concludes that Buckton's description of *opima* 'fits *cardui* perfectly well'. But Theobald mistakenly ascribes Buckton's figures of the immature aptera (fig. 1) and the adult alata (fig. 3) of *opima* to *persicae*. Even in the reproduced figures the form and proportions of cauda and siphunculi alone would rule this out, while the original sketches show the typical macroscopic characters of *cardui* even more clearly and leave no room for doubt.

Börner (1952 : 104) places *opima* as a synonym of *cardui*, as do Kloet & Hincks (1964 : 75).

Aphis pedicularis Buckton = ***Aphis nasturtii*** Kaltenbach

Aphis nasturtii Kaltenbach, 1843 : 76.
Aphis transiens Walker, 1849*b* : xliv.
Aphis rhamni Koch, 1854 : 119, nec Boyer de Fonscolombe, 1841 : 177.
[*Aphis acetosae* F.; Koch, 1855 : 145. Misidentification.]
Aphis pedicularis Buckton, 1879 : 41; pl. 48, figs 4, 5.
Aphis polygoni van der Goot, 1912 : 80, nec Walker, 1848 : 2249.
Aphis abbreviata Patch, 1912 : 170.
Aphis acetosella Theobald, 1918 : 286
[*Aphis solanina* Passerini; Theobald, 1919 : 161. Misidentification.]
Aphis githaginella Theobald, 1927 : 168.
Aphis neopolygoni Theobald, 1927 : 160.
Aphidula nasturtii (Kaltenbach) Börner, 1952 : 79.

LECTOTYPE here designated: apterous viviparous female. Norfolk, fens. *Pedicularis palustris*. 14.vii.(year ?). (Collector not stated, perhaps *Barrett*). (*312a**).

Paralectotypes: 5 apterous viviparous females. Data as lectotype. (*312*).

BIOMETRIC DATA. Lectotype, aptera: body length 2·13 mm, antennal flagellum 0·90 mm, ratios of segments III–VI 29 : 21 : 19 : 14 + 29, siphunculus 0·28 mm, cauda 0·20 mm, caudal hairs 7, ultimate rostral segment 0·11 mm, second segment of hind tarsus 0·10 mm, eighth tergite with 2 hairs, articular diameter of ant. seg. III 22μ, longest hair on ant. seg. III 14μ, on hind femur 45μ, on hind tibia 45μ, on eighth tergite 45μ.

Buckton describes and figures only the apterous viviparous female and young larva. The single slide, named *pedicularis* in Buckton's hand, contained six adult apterae of what I take to be *Aphis nasturtii* Kaltenbach. His original sketch records rather skilfully the rounded shape, yellow-green colour and matt-textured skin characteristic of this aphid.

Endeis pellucida Buckton = ***Geoica eragrostidis*** (Passerini)

Buckton, 1883 : 91; pl. 129, figs 2, 4.
(For synonymy, see *carnosa*, p. 41.)

LECTOTYPE here designated: apterous viviparous female. Kent, Beckenham, in ants' nest. ii.1876 (or 7.ii.1879). (*Lubbock*). (*89**).

Biometric data. Lectotype, aptera: body length 1·26 mm, whole antenna 0·40 mm, ratios of antennal segments I–IV 8 : 9 : 20 : 13, ultimate rostral segment 0·16 mm, second segment of hind tarsus 0·10 mm.

The viviparous female is described and Buckton's notes on the sheet of sketches indicate that his specimen was one of those sent by Lubbock from ants' nests. Two dates are written beside the sketch of *pellucida:* February, 1876, and 7 February, 1879, without indication as to which applies. Of five specimens labelled *pellucida* by Buckton, that which best fits his description, notes and figures is the larger of two apterous *Geoica eragrostidis* (Passerini) on *89*, and this I believe to be his type. It differs from the type of *carnosa* (which is also *eragrostidis*) in having acute instead of flabellate hairs.

Theobald (1929 : 197) refers to what he believed was Buckton's type of *pellucida*, but he quotes the label of *317*, the two specimens on which, though both *eragrostidis*, agree less closely with Buckton's data than the one I have chosen on *89*. Moreover, the label of *89* and Buckton's sketch of *pellucida* are both marked '$\overset{\text{F}}{\text{X}}$ No. 1'.

None of the specimens named *pellucida* has antennae 'with five nearly equal joints', as Buckton says in his description, and shows in his sketch and figure 4.

Aphis penicillata Buckton = ***Aphis grossulariae*** Kaltenbach

Aphis grossulariae Kaltenbach, 1843 : 67. [No type exists.]
Aphis penicillata Buckton, 1879 : 51; pl. 51, figs 5, 6. **Syn. n.**
Aphis penicillata Buckton; Theobald, 1927 : 212.
Aphidula grossulariae (Kaltenbach) Börner, 1952 : 78.

LECTOTYPE here designated: apterous viviparous female. Pembroke. *Epilobium montanum.* vii.(year ?). (Collector not stated, perhaps *Barrett*). (*163**).

Paralectotypes: 4 apterous, 4 alate viviparous females. Data as lectotype. (*163a**, *b**, *c**).

Biometric data. Lectotype, aptera: body length 1·92 mm, antennal flagellum 0·88 mm, ratios of segments III–VI 26 : 19 : 19 : 14 + 32, siphunculus 0·30 mm, cauda 0·22 mm, caudal hairs 12, ultimate rostral segment 0·16 mm, second segment of hind tarsus 0·10 mm, eighth tergite with 2 hairs, articular diameter of ant. seg. III 20μ, longest hair on ant. seg. III 30μ, on hind femur 55μ, on hind tibia 60μ, on eighth tergite 50μ, marginal tubercles present on abd. segs I–IV and VII, I–III and VII.

Paralectotype alata: body length 2·30 mm, ant. flag. 1·18 mm, ratios segs III–VI 40 : 26 : 24 : 18 + 39, secondary rhinaria on III 11, on IV 4, on V 1, siph. 0·30 mm, cauda 0·21 mm, caudal hairs 13, ult. rost. seg. 0·14 mm, second seg. hind tarsus 0·10 mm, eighth tergite with 2 hairs, artic. diam. ant. seg. III 20μ, longest hair on ant. seg. III 32μ, on hind femur 50μ, on hind tibia 50μ, on eighth tergite 60μ, marginal tubercles present on abd. segs I–V and VII, I–III and VII.

Buckton describes the apterous and alate viviparous females from specimens taken at Pembroke in July and subsequently at Haslemere. I believe his types of *penicillata* to be five apterae and four alatae of *Aphis grossulariae* Kaltenbach originally mounted on *163*, which was at first labelled simply 'Epilobium. Pembroke. $\overset{\text{L}}{\text{S}}$.' in Buckton's hand, and later named '*Aphis epilobii* (81) D.C. $\overset{\text{B}}{\text{N}}$.' on one of Buckton's typewritten labels. ($\overset{\text{B}}{\text{N}}$ occurs on other slides named *epilobii*.) Buckton's original sketches of *penicillata*, entitled 'Epilobium. Pembroke. July. $\overset{\text{L}}{\text{S}}$.' show a rather yellowish green aptera with pale yellow-brown appendages, and an alata with black head, thorax, antennae, femora and tibial apices, and a dark green abdomen with clearly defined marginal tubercles, which are mentioned also in the text. These characters are consistent with the mounted specimens, the apterae of which have the unpigmented head, stigmal plates and cauda, as well as marginal tubercles on many of the abdominal segments, characteristic of *grossulariae*.

Theobald (1927 : 212) quotes Buckton's original description in full and mentions a Buckton slide of specimens he had seen and believed to be *penicillata*, and of which he adds some details. This slide is *318*, which contained seven alatae and three nymphs, but no apterae, of *Aphis grossulariae* Kaltenbach (now remounted) and had been tentatively named '? *penicillata*' by Laing. The original slide apparently carried no data except the code $\overset{\text{B}}{\text{U}}$ and another, partly obliterated, which Theobald interpreted as $\overset{\text{L}}{\text{I}}$. $\overset{\text{B}}{\text{U}}$ occurs elsewhere only on slides named by Buckton *urticaria*, which contain a mixture of *urticata* F. and *confusa* Walker. The fact that *penicillata* follows *urticaria* in the monograph and the two are figured on the same plate may have led Laing to conclude that these specimens were the types of *penicillata*. I cannot disprove his conclusion, but prefer to regard as Buckton's types the specimens on *163*, which carries data that link them with his sketches and also includes adult apterae, which are absent from *318*. Buckton recognizes (1879 : 72) that *penicillata* is distinct from his concept of *epilobii* Kaltenbach, which he appears to have based on a mixture of *epilobiaria* Theobald and *praeterita* Walker, and I think it likely that, having described and figured the specimens on *163* as *penicillata*, he omitted to alter the name on the label.

Aphis petasitidis Buckton = ***Brachycaudus helichrysi*** (Kaltenbach)

Buckton, 1879 : 69, pl. 58, figs 1, 2.

LECTOTYPE here designated: alate viviparous female. Northumberland, Holy Island. *Cynoglossum* or *Pyrethrum*. 1.vii.(year ?). (*Hardy*). (*332*).

Paralectotypes: 2 apterous, 4 alate viviparous females, 3 larvae. Data as lectotype. (*332*). 8 alate viviparous females, 7 nymphs, 1 larva. East Hertfordshire, Albury. *Petasites hybridus*. 15.vi.(year ?). (Collector not stated). (*331, 333*).

Biometric data. Lectotype, alata: body length 1·60 mm, antennal flagellum 1·12 mm, ratios of segments III–VI 45 : 27 : 17 : 12 + 41, secondary rhinaria on III 20, on IV 2, on V 0, siphunculus 0·14 mm, cauda 0·09 mm, caudal hairs 6, ultimate rostral segment 0·13 mm, second segment of hind tarsus 0·12 mm, eighth tergite with 7 hairs, articular diameter of ant. seg. III 18μ, longest hair on ant. seg. III 14μ, on hind femur 20μ, on hind tibia 30μ, on eighth tergite 80μ.

The adult aptera, nymph and alata are described, but only the nymph and alata figured. The hosts are given as *Tussilago petasites* (now *Petasites hybridus*) and *Cynoglossum officinale*, and the localities Albury, Herts, and Holy Island, Northumberland. Of the three slides labelled *petasitidis* by Buckton, two (*331*, *333*) contain specimens from the Albury sample, and the third (*332*) aphids from Holy Island. The label on the last records two hosts, *Cynoglossum* and *Pyrethrum*. Of the total of 28 specimens, all but two accidental inclusions are *Brachycaudus helichrysi* (Kaltenbach).

Buckton records in his notes and in the text that the alata he figured gave birth to two young while under the microscope. An alata in the Holy Island sample shows some similarities in attitude with Buckton's sketch, and the slide includes some young larvae. It seems likely that this is his type of the alate *petasitidis* and I choose it as lectotype. Though both sketch and published figure show the siphunculi as considerably longer than those of *helichrysi*, the measurement Buckton gives for siphuncular length is more nearly typical, i.e. 0·17 mm, or about one-eighth of the body length. In the lectotype this proportion is about one-tenth.

Glyphina pilosa Buckton = ***Schizolachnus pineti*** (Fabricius)

Buckton, 1883 : 16; pl. 116, figs 1–4.
(For synonymy, see *fuliginosa*, p. 57.)

LECTOTYPE here designated; alate viviparous female. Surrey, Haslemere, Meadfields. *Pinus sylvestris*. 29.vii.(year ?). (*Buckton*). (*4*).

Paralectotypes: 1 alate, 2 apterous viviparous females, 1 nymph. Surrey, Haslemere, Weycombe. *Pinus sylvestris*. 29.vii.1874 ? (*Buckton*). (*3*). 1 alate, 1 apterous viviparous female (*'pineti'* in Walker's hand). Middlesex, Southgate. *Pinus sylvestris*. 25.vi.1847. (*Walker*). (*W.653*).

Biometric data. Lectotype, alata: body length 1·44 mm, antennal flagellum 0·74 mm, ratios of segments III–VI 43 : 15 : 18 : 17, secondary rhinaria on III 7, siphuncular pore diameter 0·06 mm, ultimate rostral segment 0·12 mm, second segment of hind tarsus 0·25 mm, articular diameter of ant. seg. III 18μ, longest hair on ant. seg. III 100μ, on hind femur 180μ, on hind tibia 180μ.

Paralectotype aptera: body length 1·76 mm, ant. flag. 0·76 mm, ratios of segs III–VI 43 : 18 : 18 : 18, siph. pore diam. 0·08 mm, ult. rost. seg. 0·14 mm, second seg. hind tarsus 0·29 mm, artic. diam. ant. seg. III 34μ, longest hair on ant. seg. III 140μ, on hind femur 170μ, on hind tibia 190μ.

Buckton describes the apterous and alate viviparous females, but figures the larva and alata. The specimens, his own from Haslemere, and others sent him by Walker from Southgate, were taken from *Pinus sylvestris*. There are no slides named

Glyphina pilosa, but two of Buckton's slides, and one of Walker's in Buckton's collection, all named *Mindarus abietinus* by Buckton, contain specimens of *Schizolachnus pineti* (F.) from *Pinus sylvestris* at Weycombe, Meadfields (both near Haslemere) and Southgate, and are believed to be the types of *pilosa*.

Buckton evidently thought at first that these specimens were *Mindarus abietinus* Koch, but changed his opinion when he found that in the fore wings of his alatae the media was apparently unbranched. This ruled out *Mindarus* and led him to erect *pilosa* as a new species in *Glyphina*. In one of his three alatae (that on slide *4*) the media is indeed simple, but in that on *3* the branch is discernible though very faint. Walker's alata (*W.653*) has one fore wing crumpled but in the other the proximal branch of the media cannot be seen. Buckton's original sketch of the alata shows the fore wings each with unbranched media, but alongside is drawn a wing with branched media and the note 'very faint in some specimens'. This wing is not reproduced on plate 116, and in his published description Buckton states unequivocally that the media (he calls it the cubital) is unforked, and believes Walker to be mistaken in supposing—correctly—that the aphid is *pineti*.

I choose as lectotype the alata on *4*, a rather small specimen which agrees better with the published measurements than the others, and is likely to be the one used for figure 2.

Theobald in a footnote (1929 : 81) quotes Laing's opinion, supported by that of Swain (1921 : 212), that Buckton's specimens named *Mindarus abietinus* are *pineti* F. and likely to be the types of *pilosa*. Subsequent authors have accepted this conclusion. Börner (1952 : 40) remarks that individuals of *pineti* with the media unbranched in one or both fore wings occur as aberrations.

Pterocomma pilosum Buckton

(Pl. 6, fig. 65; Text-figs 46–50)

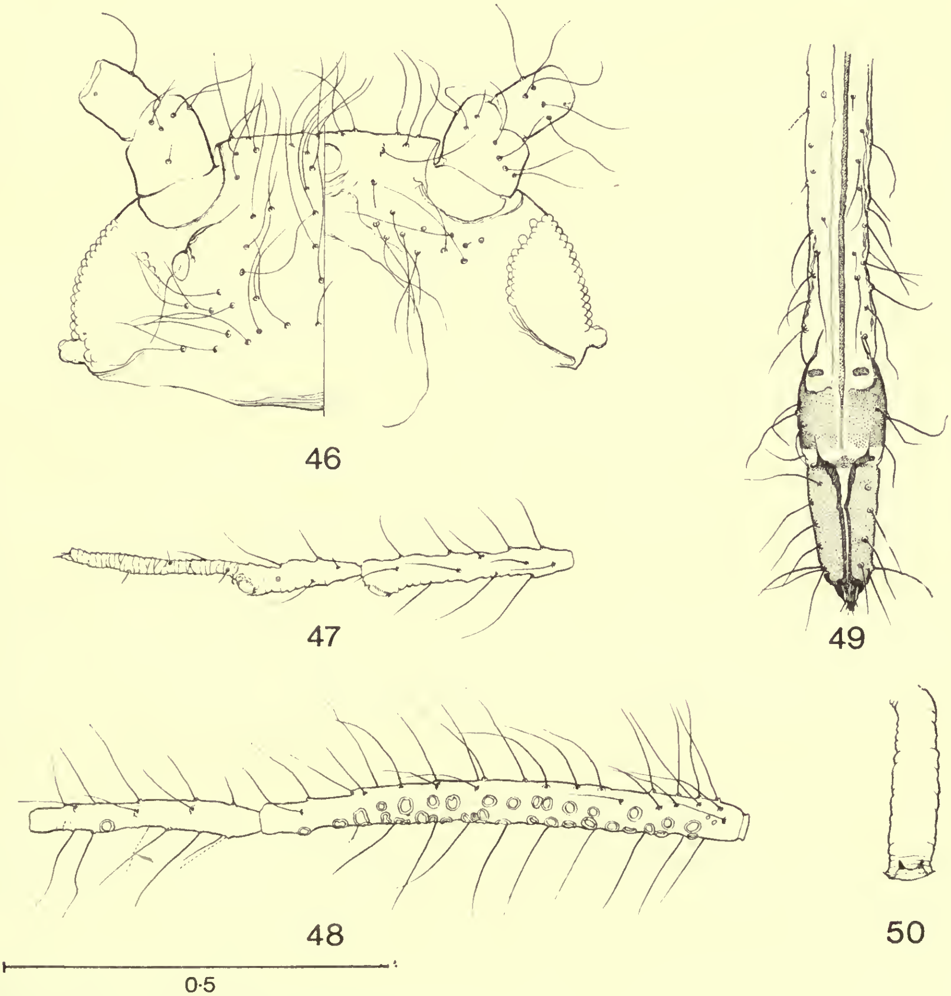
Buckton, 1879 : 143; pl. 83, figs 1–5.

(The taxonomy of the genus *Pterocomma* is so confused that I prefer not to attempt a synonymy of *pilosum* Buckton. A recent review of the Tribe Pterocommatini Mordvilko is that of Szelegiewicz (1965).)

LECTOTYPE here designated: alate viviparous female. London, Kentish Town. *Salix* sp. twigs. 28.ix.(year ?). (*Knaggs*). (*342**).

Paralectotypes: 5 larvae, 1 nymph. Data as lectotype. (*343*).

Alate viviparous female. (Plate 6, fig. 65; Text-figs 46–50.) (Description based on lectotype only.) *Colour* of macerated specimen: mostly pale brownish, with the heavily sclerotized parts, e.g. pterothorax, anal plate, knees, rather darker. The dark sclerotic transverse bands shown in the figure are scarcely discernible. *Morphology:* body large and thick, 3·04 mm long, 1·06 mm broad (I accept Buckton's measurements here, because the specimen has become unnaturally elongated by pressure in remounting). Head with numerous fine, acute hairs up to 170μ long. Antennal flagellum 1·52 mm, i.e. about half the length of the body, ratios of segments III–VI 60 : 30 : 26 : 16 + 21, antennal hairs rather numerous, fine, acute, long (up to 40μ) except on VIth segment, which has seven hairs up to about 90μ on the base and, on the processus, 4–5 much shorter hairs in addition to the 3–4 terminal sensillae. Second antennal segments each with five hairs. Third segments with 37 and 34 rather large, circular secondary rhinaria, mostly on the postero-ventral surface, the fourth with 1 and 2. Rostrum (detached from specimen; total length not measurable) with ultimate segment broad, tapering only slightly towards apex, 0·20 mm long, slightly longer than second segment of hind tarsus (0·18 mm), with 9 non-apical hairs in two lateral rows. Legs stout with numerous fine hairs, the longest reaching 150μ on the hind femora and 165μ on the hind tibiae. First tarsal segments on all legs with 5 hairs. Abdomen densely clothed with fine hairs, the longest reaching from 170μ on tergite III to 200μ on tergite VIII. Marginal tubercles absent. Eighth tergite with 14 hairs. Subgenital plate with 29 hairs. Siphunculi pale, short, 0·22 mm long, about 1·3 times as long as the cauda,



FIGS 46–50. *Pterocomma pilosum* (Buckton). Lectotype: Fig. 46. Head, upper (left) and lower surfaces. Figs 47, 48. Left antenna. Fig. 49. Apex of rostrum. Fig. 50. Siphunculus.

more or less cylindrical, with small flange. Cauda U-shaped, 0·17 mm long, four-fifths as long as its basal width, with about 20 long (150μ) hairs.

NOTES. Buckton describes the apterous and alate viviparous females and the nymph from specimens taken among colonies of *Pterocomma* (*Melanoxantherium*) *salicis* (L.) feeding on willow twigs. His manuscript notes are dated 28 September, but his published account gives the date as August. The plate contains figures of the three morphs described, but the 'aptera' (fig. 1) is drawn to a smaller scale than the other two morphs and gives the impression of being a young larva. Buckton's sketch for fig. 1 is an accurate drawing of the largest of the larvae on *343*, which is in fact larger than the nymph used as the model for fig. 2.

Siphonophora polygoni Buckton = ***Nasonovia ribisnigri*** (Mosley)

Aphis lactucae Schrank, 1801 : 120, partim, non L.
Aphis ribisnigri Mosley, 1841 : 684.
Aphis ribicola Kaltenbach, 1843 : 33.
Aphis hieracii Kaltenbach, 1843 : 17, partim; Walker, 1849*a* : 47.
Siphonophora alliariae Koch, 1855 : 177; Buckton, 1876 : 123.
Siphonophora polygoni Buckton, 1876 : 123; pl. 10, figs 1–3.
[*Siphonophora lactucae* (L.); Buckton, 1876 : 139. Misidentification.]
[*Siphonophora cichorii* Koch; Buckton, 1876 : 163, partim. Misidentification.]
[? *Myzus ribis* (L.); Buckton, 1876 : 180, partim. Misidentification.]
Macrosiphum kaltenbachi Schouteden, 1906*a* : 237.
? *Macrosiphum agrostemnium* Theobald, 1913 : 146.
Nasonovia ribicola (Kaltenbach) Mordvilko, 1929 : 51, 81.
Submacrosiphum hieracii ssp. *teriolanum* Hille Ris Lambers, 1931*b* : 10.
Nasonovia ribisnigri (Mosley) Hille Ris Lambers, 1947 : 316, Börner, 1952 : 136.

LECTOTYPE here designated: alate viviparous female. Surrey, Haslemere, Weycombe. *Polygonum persicaria*. 27.vi.1872. (*Buckton*). (*359**).

Paralectotypes: 1 alate viviparous female, 3 nymphs. Data as lectotype. (*359**).

BIOMETRIC DATA. Lectotype, alata: body length 2·04 mm, antennal flagellum 2·56 mm, ratios of segments III–VI 33 : 21 : 18 : 6 + 52, secondary rhinaria on III 46, on IV 9, on V 0, siphunculus 0·44 mm, cauda 0·22 mm, caudal hairs 7, ultimate rostral segment 0·17 mm, second segment of hind tarsus 0·14 mm, eighth tergite with 4 hairs, articular diameter of ant. seg. III 30μ, longest hair on ant. seg. III 35μ, on hind femur 30μ, on hind tibia 45μ, on eighth tergite 50μ.

All the five specimens on Buckton's single slide of *polygoni* are *Nasonovia ribisnigri* (Mosley). His original sketches, as well as the published figures, are consistent with the appearance of this species in life and I regard these specimens as his types. Only the alate female and the nymph are described and figured.

Theobald (1926 : 329) places *polygoni* Buckton in *Myzus* and paraphrases Buckton's description. He includes also a brief description of the aptera, which Buckton omits. The specimens which Theobald believed to be *polygoni* Buckton have been lost. Hille Ris Lambers, who examined Buckton's slide, was the first to identify *polygoni* correctly (H.R.L., 1933 : 174.)

Lachnus pyri Buckton = ***Pyrolachnus pyri*** (Buckton)

Lachnus pyri Buckton, 1899*a* : 274.
?*Dilachnus krishni* George, 1928 : 7.
Pyrolachnus pyri (Buckton) Basu & Hille Ris Lambers, 1968 : 13.

Buckton describes this species from specimens in alcohol sent to him by E. E. Green, who collected them in March, 1898, from pear trees in Ceylon. He gives brief accounts of the 'apterous larva' and the winged female, both of which he figures. Green adds a note that Buckton's descriptions and measurements were made from specimens shrivelled in alcohol, and gives some additional data based on living specimens, including a description of the adult aptera, which Buckton omitted. Green also adds figures of aptera and alata drawn from life.

There are no specimens of *pyri* in Buckton's collection. If types exist they are probably in Calcutta, but I have failed to trace them.

Basu & Hille Ris Lambers (1968 : 13) erect the genus *Pyrolachnus* with *pyri* Buckton as type.

Siphonophora rubi var. *rufa* = ***Macrosiphum funestum*** (Macchiati)

[*Siphonophora cyparissiae* Koch; Buckton, 1876 : 113, partim. Misidentification.]
Siphonophora rubi (Kaltenbach) var. *rufa* Buckton, 1883 : 105, pl. 130, fig. 1.
Siphonophora funesta Macchiati, 1885 : 67.
Macrosiphum rubifolium Theobald, 1917 : 78.
Macrosiphum shelkovnikovi Mordvilko, 1919 : 361.
Macrosiphum funestum (Macchiati); Hille Ris Lambers, 1939 : 90.

LECTOTYPE here designated: apterous viviparous female. Scotland, Aberdeen. *Rubus fruticosus*. 20.viii.1878. (*Trail*). (*419*).

Paralectotypes: 6 apterous viviparous females, 4 larvae. Data as lectotype. (*400*, *419*).

Biometric data. Lectotype, aptera: body length 3·12 mm, antennal flagellum 4·02 mm, ratios of segments III–VI 51 : 39 : 37 : 11 + 63, secondary rhinaria on III 6 and 7, siphunculus 1·24 mm, cauda 0·46 mm, caudal hairs 12, ultimate rostral segment 0·19 mm, second segment of hind tarsus 0·15 mm, eighth tergite with 7 hairs, articular diameter of ant. seg. III 44μ, longest hair on ant. seg. III 46μ, on hind femur 50μ, on hind tibia 55μ, on eighth tergite ±60μ.

Siphonophora scrophulariae Buckton = ***Cryptomyzus galeopsidis*** (Kaltenbach)

Aphis galeopsidis Kaltenbach, 1843 : 35. [No type exists.]
Aphis quaerens Walker, 1849*b* : xlviii.
Siphonophora scrophulariae Buckton, 1876 : 137; pl. 16, figs 1, 2. **Syn. n.**
Myzus lamii van der Goot, 1912 : 69.
Myzus whitei Theobald, 1912 : 110.
Myzus dispar Patch, 1914 : 56.
Myzus galeopsidis (Kaltenbach) van der Goot, 1915 : 107, Börner, 1920 : 119.
Capitophorus quaerens (Walker) Theobald, 1926 : 234.
Capitophorus whitei (Theobald) Theobald, 1926 : 234, partim.
Capitophorus lamii (van der Goot) Theobald, 1926 : 253, partim.

Cryptomyzus (*Myzella*) *galeopsidis* (Kaltenbach) Börner, 1930 : 139.
Myzella galeopsidis (Kaltenbach) Börner, 1938 : 472, 1952 : 134.
Cryptomyzus galeopsidis (Kaltenbach) Hille Ris Lambers, 1953 : 96.

LECTOTYPE here designated: alate viviparous female. Surrey, Haslemere. *Scrophularia nodosa* or *S. scorodonia*. 16.vii.(year ?). (*Buckton*). (*209*).

Paralectotypes: 1 alate, 1 apterous viviparous females, 1 nymph. Data as lectotype. (*209*).

BIOMETRIC DATA. Lectotype, alata: body length 2·48 mm, antennal flagellum 3·42 mm, ratios of segments III–VI 33 : 27 : 25 : 7 + 79, secondary rhinaria on III 54, on IV 28, on V 6, siphunculus 0·34 mm, cauda 0·16 mm, caudal hairs 5, ultimate rostral segment 0·13 mm, second segment of hind tarsus 0·13 mm, eighth tergite with 6 hairs, articular diameter of ant. seg. III 36μ, longest hair on ant. seg. III 26μ, on hind femur 40μ, on hind tibia 50μ, on eighth tergite 40μ (?).

Paralectotype, aptera: body length 1·64 mm, ant. flag. 3·14 mm, ratios of segs III–VI 35 : 26 : 25 : 8 + 63, sec. rhin. on III 5, 7, siphunculus 0·30 mm, cauda 0·17 mm, caudal hairs 5, ult. rost. seg. 0·11 mm, second seg. hind tarsus 0·12 mm, eighth tergite with 4 (?) hairs, artic. diam. ant. seg. III 42μ, longest hair on ant. seg. III 55μ, on hind femur 44μ, on hind tibia 60μ, on eighth tergite 70μ, on vertex 60μ.

Buckton describes the apterous and alate viviparous females and nymph, but figures only the alata and nymph. He gives the host-plant as *Scrophularia scorodonia*, which he calls 'common figroot' in the text and 'figwort' in his notes. The Common Figwort is *Scrophularia nodosa*, not *scorodonia* which is the Balm-leaved Figwort and only locally common.

There are no specimens named *scrophulariae* by Buckton, or bearing other data corresponding either with his published account or scanty notes. His original sketches give a distinct impression of a *Cryptomyzus* species, an impression supported by mention of gibbous first antennal segments, antennae 'long and hairy', and pale cornicles. The last, however, are given in the text as 'cylindrical and straight' in the aptera, 'thin, yellow, straight' in the alata, but 'like *Rhopalosiphum*' in his notes on the alata. The sketch shows thin, cylindrical cornicles in the alata, while the nymph has one cylindrical and one swollen. The only specimens of a *Cryptomyzus* species in Buckton's collection are two alatae, a nymph and an aptera of *C. galeopsidis* (Kaltenbach) on *209*, labelled originally '*Ch. aceris*. Sycamore.' and altered to '*Siphonophora*. Sycamore.' (cf. *gracilis*, p. 58.). Not without some hesitation, I accept these specimens as the types of *scrophulariae*, because the morphs described and figured are present on the slide, and the published measurements of the alata correspond fairly closely with one of the two mounted alatae, the attitude of which, moreover—slightly rolled to one side—is very similar to that in Buckton's sketch, as are the dark abdominal markings which become visible if a strong light is directed on to the top of the rather opaque specimen. The siphunculi of this alata are slightly swollen, those of the nymph distinctly so.

Theobald (1926 : 143) quotes Buckton's description verbatim and adds that Laing had found no slides of this species in Buckton's collection. Börner (1952 : 165) puts *scrophulariae* as a doubtful synonym of *Pleotrichophorus glandulosus* (Kaltenbach).

Siphonophora sisymbrii Buckton = ***Dactynotus cichorii*** (Koch)

[*Aphis picridis* sensu auctt. non Fabricius, 1775 : 737. Misidentifications.]
Siphonophora cichorii Koch, 1855 : 184.
Siphonophora sisymbrii Buckton, 1876 : 160; pl. 27, figs 4, 5.
Macrosiphum phillipsii Theobald, 1925 : 79, 1926 : 106.
[*Dactynotus cirsii* (L.); Hille Ris Lambers, 1931*a* : 170. Misidentification.]
Dactynotus cichorii (Koch) Hille Ris Lambers, 1939 : 13, Börner, 1952 : 171.

LECTOTYPE here designated: apterous viviparous female. Pembroke. *Sisymbrium officinale* (?) viii.(year ?). (*Barrett*). (*460**).

Paralectotypes: 1 alate, 4 apterous viviparous females, 1 larva. Data as lectotype. (*459**, *460**).

BIOMETRIC DATA. Lectotype, aptera: body length 3·38 mm, antennal flagellum not measurable (processi incomplete), ratios of segments III–base VI 50 : 33 : 28 : 9 + ?, secondary rhinaria on III 35, siphunculus 0·90 mm, cauda 0·58 mm, caudal hairs 21, ultimate rostral segment 0·24 mm, second segment of hind tarsus 0·18 mm, eighth tergite with 4 hairs, articular diameter of ant. seg. III 44μ, longest hair on ant. seg. III 48μ, on hind femur 50μ, on hind tibia 70μ, on eighth tergite 80μ, on vertex 70μ.

The apterous and alate viviparous females are described and figured from specimens said to have been taken on *Sisymbrium officinale.* The original slide named *sisymbrii* by Buckton contained five apterae, one alata and a larva, remounted by Laing in 1925. Except for the alata, the specimens are in good condition, and all are *Dactynotus cichorii* (Koch).

Theobald (1926 : 88) quotes Buckton's description in full and adds some further data from an examination of his slide, but retains the name *sisymbrii.* Laing had labelled the remounted specimens *picridis* (F.) and Theobald, in his key to *Macrosiphum* (1926 : 63), adds a footnote accepting this diagnosis. Börner (1952 : 170) puts *sisymbrii* as a synonym of *Dactynotus obscurus* (Koch) apparently on the authority of Hille Ris Lambers (1939), but I can find no mention of *sisymbrii* Buckton in the work referred to.

Buckton's host-plant ascription is certainly mistaken; *cichorii* is a species normally confined to a restricted range of Compositae.

Chermes taxi Buckton : nomen dubium

Buckton, 1886 : 327; pl. 7, figs 1–3.

Buckton describes and figures the gall and what he calls the apterous viviparous female, taken on the Irish yew, *Taxus baccata* var. *fastigiata,* at Ealing, Middlesex, in March. I have failed to find either specimens or original drawings which might relate to this species.

Cholodkovsky (1896 : 27), on the evidence of Buckton's coloured plate and very short description of *taxi,* concludes that Buckton had described a species of *Lecanium* (Coccoidea). Schouteden (1906*b* : 35) quotes Cholodkovsky's opinion. Lindinger (1912 : 320, No. 1108) quotes Buckton's description and places *taxi* doubtfully in *Pseudococcus.*

Dr D. J. Williams, coccidologist on the staff of the Commonwealth Institute of

Entomology, whom I consulted, knows of no coccid associated with *Taxus* that would agree with the description and figures of *taxi*. He suggested, however, that if Buckton had mistaken *Picea* for *Taxus*, the gall might possibly have been the work of *Physokermes abietis* (Geoffroy). But unless further evidence comes to light, *Chermes taxi* must be regarded as a *nomen dubium*.

Ceylonia theaecola = ***Toxoptera aurantii*** (Boyer de Fonscolombe)

Aphis aurantii Boyer de Fonscolombe, 1841 : 178.
Aphis camelliae Kaltenbach, 1843 : 122.
Toxoptera aurantiae Koch, 1856 : 330.
Aphis coffeae Nietner, 1861 : 3.
Ceylonia theaecola Buckton, 1891*a* : 34.
Toxoptera theobromae Schouteden, 1906*c* : 38.
Toxoptera citrifoliae Shiraki, 1913 : 123.

LECTOTYPE here designated: apterous viviparous female. CEYLON. *Thea* sp. ii.1890. (*Green*). (*484*).

Paralectotypes: 4 alatae, 52 apterae, nymphs, larvae. Data as lectotype. (*480–485*).

BIOMETRIC DATA. Lectotype, aptera: body length 1·76 mm, antennal flagellum 1·22 mm, ratios of segments III–VI 38 : 30 : 28 : 11 + 45, siphunculus 0·24 mm, cauda 0·19 mm, caudal hairs 20, ultimate rostral segment 0·12 mm, second segment of hind tarsus 0·09 mm, eighth tergite with 2 hairs, articular diameter of ant. seg. III 28μ, longest hair on ant. seg. III 20μ, on hind femur 60μ, on hind tibia 50μ, on eighth tergite 60μ.

Paralectotype alata: body length 1·32 mm, ant. flag. 1·36 mm, ratios segs III–VI 43 : 33 : 33 : 11 + 51, secondary rhinaria on III 4, siph. 0·27 mm, cauda 0·18 mm, caudal hairs 11, ult. rost. seg. ?, second seg. hind tarsus 0·09 mm, eighth tergite with 2 hairs, artic. diam. ant. seg. III 22μ, longest hair on ant. seg. III 24μ, on hind femur 60μ, on hind tibia 60μ, on eighth tergite 55μ.

Apterous and alate forms are briefly described and very poorly figured, from specimens taken from tea plants in Ceylon in February, 1890, and sent to Buckton for identification. There are six slides in the Buckton Collection, labelled but not signed by Laing, which have the appearance of his remounts. None bears data in Buckton's hand. Most of the specimens are in poor condition suggesting preservation in alcohol, but two apterae and two alatae are well enough preserved to make identification certain. All are *aurantii* Boyer de Fonscolombe.

Megoura viciae Buckton

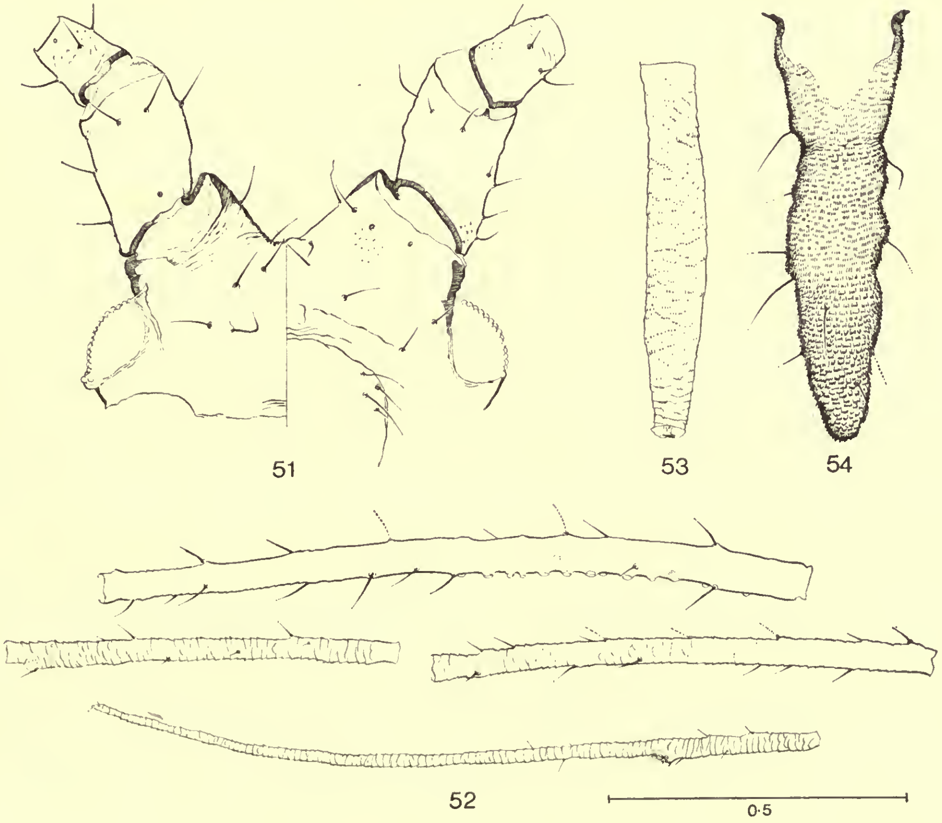
(Pl. 6, fig. 66; Text-figs 51–54)

Aphis viciae Kaltenbach, 1843 : 20, nec Fabricius, 1781 : 390.
Siphonophora viciae (Kaltenbach) Koch, 1855 : 188.
Megoura viciae Buckton, 1876 : 188; pl. 38, figs 1, 2.
Megoura viciae Buckton; Theobald, 1926 : 173, Hille Ris Lambers, 1947 : 264, Börner, 1952 : 177.
Megoura bibula Hottes, 1930 : 184.
Rhopalosiphum papilionacearum Lindinger, 1932 : 278.
Megoura kaltenbachi Hille Ris Lambers, 1938 : 1.

LECTOTYPE here designated: apterous viviparous female. Norfolk, Norwich, Ketteringham. *Vicia sepium.* ix.(year ?). (*Barrett*). (*518**).

Paralectotypes: 4 apterous, 1 alate viviparous females, 3 larvae. Data as lectotype. (*518a**, *519**, *520a**, *520b**, *522*).

Apterous viviparous female. (Plate 6, fig. 66; Text-figs 51–54.) *Colour* of macerated specimen: body pale yellowish brown; head, siphuncular sclerites, eighth tergite, anal and subgenital plates darker to blackish brown. Antennae, rostrum, siphunculi, cauda very dark brown to black, except base of antennal segment III and whole of VI which are paler brown. Femora blackish brown on distal half, remainder pale yellowish, tibiae mid-brown with black apices, tarsi dark. *Morphology:* body large, broadly spindle-shaped, 4–4·3 mm long, rather more than twice as long as broad. Head smooth, antennal tubercles large, diverging, cephalic hairs fine, acute, long, the longest reaching about 90μ. Antennal flagellum 3·9 mm long, ratios of segments III–VI 116 : 84 : 66 : 26 + 94; antennal hairs rather stout, spiny, blunt or acute, up to 60μ long or about equal to articular diameter of III. The third segment bears 16 and 14 small, tuberculate, secondary rhinaria irregularly distributed on the postero-ventral surface of the



Figs 51–54. *Megoura viciae* (Buckton). Lectotype: Fig. 51. Head, upper (left) and lower surfaces. Fig. 52. Left antennal segments III–VI. Fig. 53. Siphunculus. Fig. 54. Cauda.

basal half of the segment. Rostrum small, reaching middle coxae, apical segment 0·13–0·14 mm long, less than twice as long as its basal width and about two-thirds as long as second segment of hind tarsus (0·19 mm), with 4 non-apical hairs. Legs with stout, spiny hairs up to 60μ long on hind femora and, rarely, up to 100μ long on hind tibiae, on which hairs become shorter, thicker and more numerous towards apices. First tarsal segments all with 3 hairs. Abdomen with dorsal hairs rather sparse, acute, blunt or with very slightly swollen apices, reaching about 70μ on the third tergite and 90μ on the eighth. Ante- and postsiphuncular sclerites present, and a faintly darkened transverse sclerotic area on the eighth tergite, which bears 7 hairs. Subgenital plate with 2–3 anterior and 11–14 posterior hairs. Siphunculi fusiform, widest about the middle, tapering evenly to base and apex, the greatest diameter about twice the smallest, which is close to the small flange, imbricate over whole length with a few transverse apical striations, 0·56–0·64 mm long, about 0·14 as long as the body and not quite as long as the cauda. Cauda 0·57–0·72 mm long, elongate, tapering to a blunt apex, with a slight constriction at about one-third of its length from the base, with 12 hairs.

NOTES. The apterous and alate viviparous females are described and figured. Unfortunately, Buckton's original drawings and notes relating to *viciae* are missing. His specimens, originally mounted on five slides (*518–522*) consist of eight adult apterae, one alata and five larvae, all of *Megoura viciae* Buckton. All the slides bear Buckton's labels except *521*, the specimens on which (three apterae and two larvae) were remounted by Laing in 1920. Since this slide is marked 'Aberdeen. August.', I exclude these specimens from the type-series. Buckton's published account makes no mention of material from Aberdeen.

A full synonymy (up to 1948) and a discussion on the nomenclature of *viciae* is given by Hille Ris Lambers (1949 : 263–268).

Forda viridana Buckton = ***Forda formicaria*** von Heyden

Forda formicaria von Heyden, 1837 : 292.
Rhizoterus vacca Hartig, 1841 : 363.
Pemphigus semilunarius Passerini, 1856 : 261.
Forda viridana Buckton, 1883 : 85; pl. 127, figs 1, 2.
Geoica cyperi Schouteden, 1902 : 656.

LECTOTYPE here designated: apterous viviparous female. Northumberland, Alnwick. *Carex* sp. roots, in ants' nest. (Undated). (*Hardy*). (*523**).

Paralectotypes: 2 larvae. Data as lectotype. (*523a**, *523b**).

BIOMETRIC DATA. Lectotype, aptera: body length 2·54 mm, whole antenna 0·84 mm, ratios of segments I–V 13 : 12 : 44 : 19 : 20, ultimate rostral segment 0·27 mm, second segment of hind tarsus 0·16 mm, articular diameter of ant. seg. III 40μ, longest hair on ant. seg. III 85μ, on vertex 100μ, on hind femur 75μ, on hind tibia 80μ.

Buckton describes the viviparous female and figures a brown and a green form. The green form, according to the text and the figure legend, occurred in nests of *Formica fuliginosa* under tufts of *Aira flexuosa* near Wooler, Northumberland. The brown form is recorded from nests under tufts of *Carex* near Alnwick. It seems that both forms were sent to Buckton by Hardy. The two figures of *viridana* are the only ones on plate 127 for which original sketches and notes have not been found.

There is no slide named *viridana*, but there is one (523) which carries the data '*Carex* roots. Ants' nests. Alnwick.', together with two MS names, *Forda hirsuta* replaced by *Forda pilosa*. The slide originally contained an adult aptera and two larvae (now remounted) of *Forda formicaria* von Heyden which Laing (as quoted by Theobald, 1929 : 176) believed to be the types of *viridana*. The host and locality data on the slide correspond so closely with those published that I accept Laing's conclusion.

LIST OF NON-BUCKTONIAN SPECIES

Listed here are the aphid species (excluding Phylloxeridae) of authors other than himself which Buckton published in his monograph, or of which material is present in his collection. In each case the name and author as used by Buckton are followed by the current identification and the numbers of the slides containing specimens on which Buckton's descriptions and figures are known or believed to be based. References are to Buckton's works, unless otherwise stated.

abietina Walker, *Aphis* (1879 : 43, pl. 49) = *Elatobium abietinum* (Walker) (*2*).

abietis L., *Chermes* (1883 : 24, pls 116, 118, 119) = *Adelges viridis* (Ratzeburg) (*7, 9a*).

absinthii L., *Siphonophora* (1876 : 154, pl. 24) = *Macrosiphoniella absinthii* (L.). The description and figures are drawn from a larva (cf. *11, 14*). A Walker slide (*W.22*), labelled *absinthii*, contains *Macrosiphoniella artemisiae* (Boyer de Fonscolombe).

acerina (Walker), *Drepanosiphum* (1876 : 185, pl. 37) = *Drepanosiphum acerinum* (Walker) (*19*).

aceris (L.), *Chaitophorus* (1879 : 121, pls 78, 79): apterous viviparous female (pl. 78, fig. 1) = *Periphyllus hirticornis* (Walker) (*23*), alate viviparous female (variety α, pl. 78, fig. 2) probably = *P. acericola* (Walker) (not identifiable with a specimen; original sketch missing), alate viviparous female (variety β, pl. 78, fig. 3) = *P. testudinaceus* (Fernie) (cf. *21*; original sketch missing), apterous male (pl. 78, fig. 4) = *P. rhenanus* (Börner) (*24*; specimen from Lichtenstein), dimorph (pl. 78, fig. 5) probably = *P. testudinaceus* (not identifiable with a specimen), ovipara (pl. 78, fig. 6) = *P. rhenanus* (*24*; also from Lichtenstein), dimorph (pl. 79, fig. 6) = *P. testudinaceus* (cf. *27*), exuvia (pl. 79, fig. 7) = *P. testudinaceus* (*27*), dimorph (pl. 79, fig. 8) = *P. acericola* (*27*). The alate male described (p. 124) but not figured is also likely to be *P. rhenanus* (*25*), all the material of which is from *Acer monspessulanus* at Montpellier.

affinis (Kaltenbach), *Thecabius*: there are unpublished sketches of a leaf-gall, fundatrix and alate antenna, drawn from specimens sent by Lichtenstein. Buckton excluded *affinis* Kaltenbach from his monograph in the belief that it was not a British species. Three alate *affinis* occur among his material named *Pemphigus bursarius* (L.) (*80, 81*).

agilis Kaltenbach, *Lachnus* (1881 : 47, pl. 96). Material so named in the Buckton Collection is a mixture of *Eulachnus agilis* (Kaltenbach) and *E. brevipilosus* Börner, but the specimens described and figured are *brevipilosus* only.

alliariae (Koch), *Siphonophora* (1876 : 123, pl. 10) = *Nasonovia ribisnigri* (Mosley) (*34*).

alni (F.), *Pterocallis* (1881 : 31, pl. 92) = *Pterocallis alni* (DeGeer) (*35, 36*).

amygdali Boyer de Fonscolombe, *Aphis* (1879 : 104, pl. 73): aptera (figs 1, 2) = *Appelia schwartzi* (Börner) (*39*), alata (fig. 3) ? = *Dysaphis* (*Pomaphis*) *plantaginea* (Passerini).

artemisiae Koch, *Siphonophora* (1876 : 155, pl. 24) = *Macrosiphoniella absinthii* (L.) (*17*).

arundinis (F.), *Hyalopterus* (1879 : 111, pl. 75) = *Hyalopterus pruni* (Geoffroy) (*45*).

atriplicis L., *Aphis* (1879 : 87, pl. 65): apterous and alate viviparous females, nymph (figs 4–7) = *Aphis fabae* Scopoli (*46, 47*), apterous male, ovipara (not figured) = *Hayhurstia atriplicis* (L.) (*48*; specimens from Lichtenstein).

avellanae (Schrank), *Siphonophora* (1876 : 149, pl. 22) = *Corylobium avellanae* (Schrank) (*50, 51*).

berberidis (Kaltenbach), *Rhopalosiphum* (1879 : 14, pl. 42) = *Liosomaphis berberidis* (Kaltenbach) (*59, 60*).

betulae Heyden, *Glyphina* (1883 : 17, pl. 117) = *Pemphigus bursarius* (L.) (*71*). Buckton's slide contains a fundatrix, nymphs, larvae and an alate migrant on which his description and figures are based. His original sketches are rough and uncoloured. There is no clue to the origin of these specimens.

betularius (Kaltenbach), *Callipterus* (1881 : 14, pl. 87): apterous and alate viviparous females (figs 1, 3) = *Kallistaphis basalis* Stroyan (*68*), ovipara (fig. 2) = *Euceraphis punctipennis* (Zetterstedt) (*66*).

betulicola (Kaltenbach ?), *Callipterus* (1881 : 15, pl. 88): apterous viviparous female (fig. 2) = *Kallistaphis basalis* Stroyan (*69*; specimen mounted on its side as figured), alata (fig. 1) = *Euceraphis punctipennis* (Zetterstedt) (*69*). This specimen contains spores of a fungus, the presence of which could explain Buckton's reference to 'cottony tufts' on antennae and legs.

brassicae L., *Aphis* (1879 : 33, pl. 46) = *Brevicoryne brassicae* (L.) (*76*).

bursarius Hartig, *Pemphigus* (1881 : 117, pls 111, 113): fundatrix (pl. 111, fig. 1) probably = *Pemphigus bursarius* (L.) (Buckton's sketch is labelled Walthamstow, which suggests a Walker specimen, but none has come to light), nymph and alata (pl. 111, figs 2, 3) = *P. bursarius* (*80*), galls (pl. 111, figs 4, 5) = *P. bursarius*. The fundatrix, alate antenna and gall, named *bursarius* and figured on plate 113 (figs 6-8), are drawn from material received from Lichtenstein and are *P. immunis* Buckton (*78, 79*). Another slide (*84*) also named *bursarius*, with host given as spruce, contains an alate *Mimeuria ulmiphila* (del Guercio).

capreae (F.), *Siphocoryne* (1879 : 27, pl. 45) = *Cavariella aegopodii* (Scopoli) (*85*).

capreae Koch, *Chaitophorus* (1879 : 136, pl. 81) = *Chaitophorus truncatus* (Hausmann) (*86*).

cardui L., *Aphis* (1879 : 92, pl. 67) = *Brachycaudus cardui* (L.) (*87, 228*).

carpini Koch, *Callipterus* (1881 : 19, pl. 89): nymph (fig. 1) = *Myzocallis carpini* (Koch) (*92*), alate viviparous female (fig. 2) = *Euceraphis punctipennis* (Zetterstedt) (*92*), ovipara (fig. 3) = *Betulaphis quadrituberculata* (Kaltenbach) (*94*), apterous male (fig. 4) = *B. quadrituberculata* (*94*), alate male (fig. 5) = *E.*

punctipennis (alate female, *93*), apterous viviparous female (not figured) perhaps = *quadrituberculata* (immature, *91* or *94*).

cerasi (F.), *Myzus* (1876 : 174, pl. 33) = *Myzus cerasi* (F.) (*100, W.212*), except the alate male (fig. 4) which = *Myzus persicae* (Sulzer) (*99*).

chelidonii (Kaltenbach), *Siphonophora* (1876 : 121, pl. 9) = *Macrosiphum* (*Sitobion*) *fragariae* (Walker) (*102*).

cichorii Koch, *Siphonophora* (1876 : 163, pl. 29). No specimens have been found which relate to this species. Buckton's sketch of the aptera suggests *Nasonovia ribisnigri* (Mosley) (cf. Börner, 1952 : 136). The alata, probably a vagrant, is a *Dactynotus*, perhaps *cirsii* (L.).

cimiciformis von Heyden, *Paracletus* (1881 : 67, pl. 102) = *Anoecia* ? *corni* (F.) (*126*); described from material sent by Hardy from Berwick, Northumberland.

cistatus Walker, *Dryobius* (1881 : 78, not figured) = *Lachniella costata* (Zetterstedt). As Laing pointed out (Laing, 1923 : 245), this description relates to an alate *costata* on a Walker slide in Buckton's collection (*W.269*), the name on which is indistinctly written. The name *cistata* (Buckton) therefore falls as a synonym of *costata* (Zetterstedt).

compressa (Koch), *Colopha*. Two slides (*107, 108*) contain fundatrices, nymphs and alatae obtained from Montpellier. A sheet with notes and coloured sketches of fundatrix, alate migrant and gall is among Buckton's unpublished originals.

convolvuli (Kaltenbach), *Siphonophora* (1876 : 148, pl. 21): apterous viviparous female, nymph (figs 1, 2) = *Aulacorthum solani* (Kaltenbach) (*109*), alate viviparous female (fig. 3) = *Myzus persicae* (Sulzer) (*110*).

corni (F.), *Schizoneura* (1881 : 107, pl. 110) = *Anoecia corni* (F.) group (*119, 125*). The specimens received from Lichtenstein to which Buckton refers on p. 109 are on *118* and *119*.

corticalis Kaltenbach, *Chermes* (1883 : 23, pls 117, 117 bis) = *Pineus pini* (Gmelin *in* Linnaeus) (*112*). Slide *113*, also named *corticalis*, contains *Adelges* (*Dreyfusia*) *nordmannianae* (Eckstein) collected by McLachlan from *Pinus nordmanniana*.

coryli Goeze, *Callipterus* (1881 : 17, pl. 88) = *Myzocallis coryli* (Goeze) (*127*).

crataegaria Walker, *Aphis* (1879 : 37, pl. 47) = *Aphis pomi* DeGeer (*128*).

crataegi Kaltenbach, *Aphis* (1879 : 35, pl. 47) = *Aphis pomi* DeGeer (*129*).

croaticus Koch, *Dryobius* (1881 : 74, pl. 104) = *Lachnus roboris* (L.). The specimens collected by Andrews at Southwater, Sussex, are those on *133, 134* and *135*; those from Lichtenstein are on *137*. Another slide (*136*), labelled '*croaticus* = *roboris* Walker', contains an alate *longirostris* Börner and may be one of the Walker specimens to which Buckton refers (pp. 76, 77).

cyparissiae Koch, *Siphonophora* (1876 : 113, pl. 5): alata = *Macrosiphum funestum* (Macchiati) (*141*), aptera probably = *M. rosae* (L.) from *Scabiosa* (cf. *448, 450*).

dianthi Schrank, *Rhopalosiphum* (1879 : 15, pl. 43) = *Myzus persicae* (Sulzer) (*321, 322, 325*).

dirhoda (Walker), *Siphonophora* (1876 : 132, pl. 13 bis) = *Metopolophium dirhodum* (Walker) (*148–150*).

dryophila Westwood, *Thelaxes* (1883 : 8, pl. 115) = *Thelaxes dryophila* (Schrank) (*155, 156, 158, 159*). The specimens sent by Foran from Eastbourne, Sussex, are on *157*; a male, ovipara and eggs from Montpellier on *156* are likely to be the models for figs 6 and 7.

epilobii Kaltenbach, *Aphis* (1879 : 71, pl. 58) = *Aphis epilobiaria* Theobald (*164*, *165*).

eragrostidis, *Tychea* (1883 : 89, pl. 128): fundatrix (fig. 5) = *Aploneura lentisci* (Passerini) (*166*), fundatrigenia (fig. 6) ? = *Pemphigus* sp. (*166*).

eriophori (Haliday), *Hyalopterus* (1879 : 117, not figured) = *Ceruraphis eriophori* (Walker) (*W.337*).

euonymi F., *Aphis* (1879 : 72, pl. 59): apterous viviparous female (fig. 1) = *Aphis evonymi* F. (*170*), alata and nymph (not figured) = mixture of *evonymi* and *fabae* Scopoli (*167*, *168*, *169*, *171*). The specimens sent by Trail from Aberdeen are *fabae* (*168*, *169*).

fagi (L.), *Phyllaphis* (1881 : 37, pl. 94) = *Phyllaphis fagi* (L.) (*172–174*). Buckton's drawing of an 'apterous male' is taken from a larval ovipara on *173*.

farfarae Koch, *Aphis* (1879 : 68, pl. 57) = *Anuraphis farfarae* (Koch) (*176*).

filaginis (Boyer de Fonscolombe), *Pemphigus* (1881 : 128, pl. 114) ? = *Pemphigus filaginis* (Boyer de Fonscolombe). Buckton's only slide named *filaginis* (*177*) contains some poorly preserved alatae of a *Pemphigus* sp. indet. received from Lichtenstein. His figures of *filaginis* are based on some uncoloured sketches of specimens which, according to his notes, are probably those sent by Hardy from *Gnaphalium* in Scotland. If so his diagnosis is probably correct. The Scottish material is no longer extant.

flava (Forbes), *Sipha: 178–180* contain specimens from *Sorghum*, Illinois, U.S.A.

foeniculi Passerini, *Siphocoryne* (1879 : 26, pl. 45) ? = *Cavariella* sp. There are no specimens named *foeniculi* by Buckton. His description and figures, especially his sketches, suggest *Cavariella* rather than *Hyadaphis*, despite his statement (p. 27) that there is no supracaudal process.

formicaria von Heyden, *Forda* (1883 : 83, pl. 126) = *Forda formicaria* von Heyden (*186*, *188*). Fig. 2 may be drawn from a larval *Anoecia* sp. (cf. *116*, *117*).

fragariae Koch, *Siphonophora* (1876 : 125, not figured) = mixture of *Macrosiphum* (*Sitobion*) *fragariae* (Walker), *Aulacorthum solani* (Kaltenbach) and *Myzus persicae* (Sulzer) (*191*, *192*).

fuscifrons Koch, *Pemphigus* (1881 : 113, pl. 110) = *Pemphigus bursarius* (L.) (*75*, *201*, *202*), except ovipara (fig. 8) which probably = *Aploneura lentisci* (Passerini) (*200*; specimen from Lichtenstein, named *fuscicornis*).

galeopsidis (Kaltenbach), *Phorodon* (1876 : 171, pl. 32) = *Capitophorus hippophaes* (Walker) (*207*).

granaria (Kirby), *Siphonophora* (1876 : 114, pl. 6) = *Macrosiphum* (*Sitobion*) *fragariae* (Walker) (*190*, *211*).

hederae Kaltenbach, *Aphis* (1879 : 75, pl. 60) = *Aphis hederae* Kaltenbach (*212*).

hieracii Kaltenbach, *Aphis* (1879 : 67, pl. 57) = *Aphis hieracii* Buckton non Kaltenbach, *nomen dubium*. There are no specimens which I can identify with Buckton's description and figures. His original sketches of *hieracii* are missing. This cannot be *hieracii* of Kaltenbach or of Schrank, and without further evidence must remain undetermined.

hieracii Kaltenbach, *Siphonophora* (1876 : 126, pl. 11) ? = *Nasonovia compositellae* ssp. *nigra* Hille Ris Lambers. Buckton's specimens, which he collected himself on *Hieracium sylvestre* and *H. murorum* at Weycombe on 3 July, are missing from his collection. His original sketches and his host-record point to *nigra* as a probability. The sketches do not relate to a Walker slide (*W.411*), labelled *Siphonophora hieracii* by Buckton, which contains *Nasonovia ribisnigri* (Mosley) from Burdock at Southgate, nor to *213*, unnamed, which contains *Nasonovia pilosellae* Börner from *Hieracium* at Berwick. Buckton records having received these from Hardy in August (year not given) in a manuscript note added to his own copy of his monograph (Vol. I, p. 146)[3].

humuli (Schrank), *Phorodon,* (1876 : 166, pl. 30) = *Phorodon humuli* (Schrank) (*214–216*).

humuli var. *mahaleb* (Boyer de Fonscolombe), *Phorodon* (1876 : 168, pl. 31) = *Phorodon humuli* (Schrank) (*275, 276*).

jaceae (L.), *Siphonophora* (1876 : 153, pl. 23) = *Dactynotus* (*Uromelan*) *jaceae* (L.) (*221, 222*).

jacobaeae Schrank, *Aphis* (1879 : 79, pl. 62) = *Aphis jacobaeae* Schrank (*223, 227*).

juglandicola (Kaltenbach), *Pterocallis* (1881 : 32, pl. 92) = *Chromaphis juglandicola* (Kaltenbach) (*231*).

juglandis (Frisch), *Ptychodes* (1881 : 40, pl. 95) = *Callaphis juglandis* (Goeze) (*229, 230*).

juniperi (F.), *Lachnus* (1881 : 44, pl. 96) = *Cinara juniperi* (DeGeer) (*232–234*).

laburni Kaltenbach, *Aphis* (1879 : 86, pl. 65) = *Aphis cytisorum* Hartig (*235*).

lactucae (Kaltenbach), *Rhopalosiphum* (1879 : 10, pl. 40): alata (fig. 4) (? also larva, fig. 2, and nymph, fig. 3) = *Hyperomyzus lactucae* (L.) (cf. *237*), aptera (fig. 1) = *H. lampsanae* (Börner) (*236*).

lactucae (Kaltenbach), *Siphonophora* (1876 : 139, pl. 16) probably = *Nasonovia ribisnigri* (Mosley), to judge from Buckton's sketches. No extant specimens relate to this species.

lactucarius Passerini, *Pemphigus* (1881 : 124, pl. 112) = *Pemphigus bursarius* (L.) (*77, 82*).

lanigera (Hausmann), *Schizoneura* (1881 : 89, pls 105, 106) = *Eriosoma lanigerum* (Hausmann) (*241–245*). Most of Buckton's figures can be matched with specimens. Those from Lichtenstein, mentioned on p. 93, are on *243* and *245*.

lanuginosa Hartig, *Schizoneura* (1881 : 104, pl. 109) = *Schizoneura lanuginosa* Hartig (*246–249*).

laricis Hartig, *Chermes* (1883 : 33, pls 119, 120) = *Adelges laricis* Vallot (*250, 255*) and *Adelges viridis* (Ratzeburg) (*251*).

lataniae Lichtenstein, *Cerataphis* (1883 : 198, pl. 134). Buckton's apterae, all from 'palms and orchids' under glass at Chichester, Sussex (*Anderson*), are *Cerataphis orchidearum* (Westwood) (*259, 261, 262*). His alata, described and figured from specimens sent by Lichtenstein from Montpellier, appears to be *C. lataniae* (Boisduval) (*258*).

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[3] In the library of the Royal Entomological Society of London.

leucomelas Koch, *Chaitophorus* (1879 : 135, pl. 80) = *Chaitophorus versicolor* Koch (*263*).

ligustri (Kaltenbach), *Rhopalosiphum* (1879 : 13, pl. 41) = *Myzus ligustri* (Mosley) (*264*).

longipes Dufour, *Lachnus* (1881 : 59, pl. 101) = *Tuberolachnus salignus* (Gmelin) (*265*).

longistigma Monell, *Lachnus* (1881 : 61) = *Longistigma caryae* Harris (*267–269*). Buckton likens this American species to *longipes* Dufour.

lychnidis L., *Aphis* (1879 : 73, pl. 59): aptera (fig. 2) = *Brachycaudus klugkisti* (Börner) (*272*), alata (fig. 3) = *Aphis hederae* Kaltenbach (*273*).

mali F., *Aphis* (1879 : 44, pls. 50, 69 bis): fundatrix (pl. 50, fig. 1) = *Dysaphis* (*Pomaphis*) *plantaginea* (Passerini) (*277*), apterous and alate viviparous females, nymph (pl. 50, figs 2, 5, 6) ? = *Rhopalosiphum insertum* (Walker) (*277*), apterous male (not figured) and ovipara (pl. 69 bis, fig. 1) = *Aphis pomi* DeGeer (*278*). The sexuales on *278* are those sent by Lichtenstein to which Buckton refers on p. 48.

malvae Walker, *Aphis* (1879 : 42, pl. 49): aptera (fig. 1) = *Acyrthosiphon malvae* (Mosley) larva (*279*), ovipara (not figured) ? = *Myzus persicae* (Sulzer) apterous viviparous female (*280*), alate viviparous female (fig. 2) unidentifiable. Buckton's sketches include one of the 'ovipara' (not reproduced) which suggests a sclerotic winter aptera or larva of *persicae*, perhaps one of those on *280* from *Cineraria* in November.

millefolii (F.), *Siphonophora* (1876 : 127, pl. 12) = *Macrosiphoniella millefolii* (DeGeer) (*285–287*).

myosotidis Koch, *Aphis* (1879 : 102, pl. 72). There are no specimens so named by Buckton. His descriptions and sketches suggest that his aptera and larva (figs 1, 2) are probably *Brachycaudus helichrysi* (Kaltenbach) and his alata (fig. 3) *B. cardui* (L.). His notes imply that all three figures are drawn from specimens from *Senecio vulgaris*.

nephrelepidis Davis, *Idiopterus:* slide *295* (unnamed) contains apterae from ferns in a greenhouse at Eastbourne, Sussex, as noted by Laing (Laing, 1923 : 241).

nymphaeae (L.), *Rhopalosiphum* (1879 : 12, pl. 41) = *Rhopalosiphum nymphaeae* (L.) (*296*).

oxyacanthae Koch, *Aphis* (1879 : 37): not described or figured by Buckton, but mentioned in passing as a *Crataegus*-feeding aphid different from *crataegi* Kaltenbach. The only slides labelled *oxyacanthae* Koch (*304, 305*) contain apterae, nymphs and males of *Dysaphis devecta* (Walker) from *Malus sylvestris*, specimens which I believe to be those described and figured by Buckton as *pyri* Boyer de Fonscolombe (1879 : 97, pl. 69).

padi Réaumur, *Aphis* (1879 : 61, pl. 55) = *Rhopalosiphum padi* (L.) (*306*).

pallidus (Haliday), *Pemphigus* (1881 : 127, pl. 113): fundatrix (fig. 1) ? = *Thecabius affinis* (Kaltenbach) (*308c*), nymph, alata (figs 2, 3) = *Kaltenbachiella pallida* (Haliday) (*308a, 308b*). Buckton's material of *pallida* was sent by Lichtenstein; there is no British material in his collection.

papaveris F., *Aphis* (1879 : 91, pl. 66) = *Aphis fabae* Scopoli (*309, 310*).

pastinacae (L.), *Siphocoryne* (1879 : 24, pl. 43) = *Cavariella aegopodii* (Scopoli) (*311*).

pelargonii (Kaltenbach), *Siphonophora* (1876 : 136, pl. 15) = *Acyrthosiphon malvae* (Mosley) (*313, 314*).

persicae (Sulzer), *Myzus* (1876 : 178, pl. 35) = *Myzus persicae* (Sulzer) (*324, 327, 328, 330*).

phaseoli Passerini, *Tychea* (1883 : 90, pl. 128) = *Smynthurodes betae* Westwood (*334*).

piceae Walker, *Lachnus* (1881 : 58, pl. 100) = *Cinara piceae* (Panzer) (*338*).

pini Koch(?), *Chermes* (1883 : 40, pl. 117 bis) ? = *Pineus pini* (Gmelin *in* Linnaeus). There is no material so named.

pini (L.), *Lachnus* (1881 : 50, pl. 97; 1886 : 324, pl. 5): aptera (pl. 97, fig. 3; pl. 5, fig. 1) = *Cinara pinicola* (Kalt.), ovipara (*274*) (see above, p. 66), aptera, 'dark variety' (pl. 97, fig. 4) = *Cinara pinea* (Mordvilko) (*344*), nymph and alata (pl. 5, figs 2, 3) = *Cinara boerneri* Hille Ris Lambers (*348*). Buckton's figure of the 'alate female' is based on an alate male of *boerneri* sent to him by Bignell from Devon.

pinicolus Kaltenbach, *Lachnus* (1881 : 52, pl. 98) = *Cinara boerneri* Hille Ris Lambers (*349a, 351a*). As with *pini* above, the 'alate female' of *pinicolus* is based on an alate male of *boerneri*.

pisi (Kaltenbach), *Siphonophora* (1876 : 134, pl. 14). There are no specimens so named. Buckton states (p. 135) that the 'glaucous female' (presumably the aptera) figured on plate 14 was taken on *Urtica dioica*; it is therefore likely to be *Microlophium carnosum* (Buckton) (cf. *511*). The alata is probably *Acyrthosiphon pisum* (Harris).

platani (Kaltenbach), *Tinocallis*: slide *161* contains an alata from Italy remounted by Laing from a slide of Richter's, Montpellier.

platanoides (Schrank), *Drepanosiphum* (1876 : 183, pl. 36) = *Drepanosiphum platanoidis* (Schrank) (*111, 355–357*).

populeus (Kaltenbach), *Chaitophorus* (1879 : 137, pl. 81) = *Chaitophorus versicolor* Koch (*360, 361*).

populi (L.), *Chaitophorus* (1879 : 140, pl. 82) ? = *Chaitophorus versicolor* Koch (*362*).

pruni Réaumur, *Aphis* (1879 : 64, pl. 56): apterous viviparous female (not figured) probably = *Rhopalosiphum insertum* (Walker), nymph (fig. 1) = *Brachycaudus helichrysi* (Kaltenbach) (*366*), alate viviparous female (fig. 2) = *Dysaphis* (*Pomaphis*) *plantaginea* (Passerini) (*369*), alate male (fig. 3) and ovipara (fig. 4) = *R. insertum* (*367*).

pruni (F.), *Hyalopterus* (1879 : 110, pl. 75) = *Hyalopterus pruni* (Geoffroy) (*44*).

pyraria Passerini, *Aphis* (1879 : 53, pl. 52) = *Longiunguis pyrarius* (Passerini) (*372, 374*).

pyri Boyer de Fonscolombe, *Aphis* (1879 : 97, pl. 69) = *Dysaphis devecta* (Walker) (*304, 305*). (See *oxyacanthae* Koch, above.)

pyricola (Baker & Davidson), *Schizoneura*. Among Buckton's material named *Schizoneura ulmi* are three alatae from elm leaf-galls at Maldon, Essex, which appear to be *pyricola* (*541, 541a*). Buckton notes that they are smaller than alate *ulmi* and that the galls are formed by the elm leaves becoming 'rolled upwards'. The specimens, which are poorly preserved, have only 14–15 secondary rhinaria on antennal segment III and apparently 4 caudal hairs. There are unpublished sketches of the wings, but not the gall.

querceus (Kaltenbach), *Callipterus* (1881 : 24, pl. 91) = *Tuberculoides annulatus* (Hartig) (*381, 382*).

quercus (Kaltenbach), *Callipterus* (1881 : 21, pl. 90) = *Tuberculoides annulatus* (Hartig) (*377–379, 381*).

quercus (Réaumur), *Stomaphis* (1881 : 62, pl. 101) = *Stomaphis quercus* (L.) (*376*).

ranunculina (Walker), *Tubaphis*, receives no mention in the monograph although two slides (*387, 388*) contain apterae and larvae. Both are labelled *Siphonophora ranunculi* by Buckton and *387* is marked 'Aberdeen. Sept. 1887.'

ribis (L.), *Myzus* (1876 : 180, pl. 34): aptera (fig. 1) and nymph (fig. 2) ? = *Cryptomyzus ribis* (L.), alata (fig. 3) = *Nasonovia ribisnigri* (Mosley). Identifications are deduced from original sketches, to which no extant specimens can be related.

ribis (L.), *Rhopalosiphum* (1879 : 9, pl. 39) = *Hyperomyzus lactucae* (L.) (*391–393*).

roboris (L.), *Dryobius* (1881 : 71, pl. 103) = *Lachnus roboris* (L.) (*394–397*). Buckton's account is based on material sent by Lichtenstein.

rosae (Réaumur), *Siphonophora* (1876 : 103, pls 1, 2, 4) = *Macrosiphum rosae* (L.) (*399, 401–403, 405*). Figures 2 and 4, plate 1, appear to have been drawn from a larva and an ovipara, respectively, of *Myzaphis rosarum* (Kaltenbach) (*404, 407*). The specimens identified as *rosae* which Buckton records (1883 : 180) having received from roses at Kaladhungi in the former North West Frontier Province of India are apterae and larvae of *Macrosiphum* (*Sitobion*) *rosaeformis* Das (*406*).

rosarum (Walker), *Siphonophora* (1876 : 150, pl. 22 bis) = *Chaetosiphon* (*Pentatrichopus*) *tetrarhodus* (Walker) (*408, 409*).

rubi (Kaltenbach), *Siphonophora* (1876 : 140, pls 17, 18) = *Amphorophora rubi* (Kaltenbach) (*412–414, 418*). Buckton's reference (p. 141) to *rubi* on *Sarothamnus scoparius* probably relates to specimens of *Acyrthosiphon pisum* (Harris) (*410*).

rubra Lichtenstein, *Tetraneura* (referred to (1881 : 131) but not described) ? = *Tetraneura caerulescens* (Passerini) (*420, 421*: alatae from red hairy galls on *Ulmus*, Montpellier, September, very poorly preserved).

rumicis L. *Aphis* (1879 : 81 pls 63, 64) = *Aphis fabae* Scopoli (*423, 424*).

saliceti Kaltenbach, *Aphis* (1879 : 52, pl. 51 bis): aptera (figs 1, 2) = *Aphis farinosa* Gmelin (*428*), alata (fig. 3) = *Cavariella theobaldi* (Gillette & Bragg) (*427, 428*).

salicis (L.), *Melanoxanthus* (1879 : 21, pl. 42) = *Pterocomma salicis* (L.) (*429–433*).

salicivorus (Walker), *Chaitophorus* (1879 : 134, pl. 80) = *Chaitophorus capreae* (Mosley) (*434, 435*).

sambucaria, Passerini, *Aphis* (1879 : 95, pl. 68): alate male (fig. 7) = *Rhopalosiphum padi* (L.) (*443, 445*), ovipara (fig. 6) = *Aphis sambuci* L. (*443–445*). Buckton had no specimens of the apterous and alate viviparae and quotes Passerini's descriptions of these morphs.

sambuci L., *Aphis* (1879 : 99, pl. 70) = *Aphis sambuci* L. (*446*).

sanborni (Gillette), *Macrosiphoniella*. Some specimens from Calcutta, unnamed and without other data, have been remounted by Laing on *103*.

scabiosae Kaltenbach, *Aphis* (1879 : 55, pl. 53): aptera (figs 2, 3) and nymph (fig. 1) = *Aphis gossypii* Glover (*139*), alata (fig. 4) = *Aphis confusa* Walker (*510*). Buckton's notes refer to the specimens he used to illustrate the aptera and nymph of *scabiosae* as 'melon aphis'. What appear to be these specimens are mounted on the same slide (*139*) as the type of *cucurbiti* Buckton (= *gossypii* Glover).

scabiosae (Schrank), *Siphonophora* (1876 : 112, pl. 4 bis) = *Macrosiphum rosae* (L.) (*448*, *450*).

sedi Kaltenbach, *Aphis* (1879 : 90, pl. 66) = *Aphis sedi* Kaltenbach (*452*).

serrulatus Haliday, *Atheroides:* Laing (Laing, 1920 : 39) noted the presence of this species in the Buckton Collection, though Buckton published no description of it. The slide (*454*), labelled *Atheroides serrulatus* by Buckton but with no other data, contains two apterae.

setariae Passerini, *Tychea* (1883 : 88, pl. 128): fundatrix (figs 1, 2, 2a) = *Geoica setulosa* (Passerini) apterous viviparous female on *457*, fundatrigenia (figs 3, 3a) = *Geoica eragrostidis* (Passerini) (*456*), 'matured individual' (figs 4, 4a, 4b) = *Forda formicaria* von Heyden (*457a*).

setulosa Passerini, *Tychea* (1883 : 87, pl. 127): viviparous female (figs 5, 6) = *Geoica eragrostidis* (Passerini) (*458*, *531*), 'variety' (fig. 7) = *Anoecia ?corni* (F.) group (*531*).

solidaginis (F.), *Siphonophora* (1876 : 156, pl. 25) = *Dactynotus* (*Uromelan*) *solidaginis* (F.) (*461*).

sonchi (L.), *Siphonophora* (1876 : 161, pl. 28) = *Dactynotus jaceicola* Hille Ris Lambers (*463*). Details of head and abdominal apex (figs 3, 4) have been drawn from an alate *D.* (*U.*) *taraxaci* (Kaltenbach) (*462*).

sorbi Kaltenbach, *Aphis* (1879 : 58, pl. 54) = *Rhopalosiphum padi* (L.) (*464*, *465*).

spirothecae Koch [sic], *Pemphigus* (1881 : 122, pls 111, 112): the aptera on pl. 111 (fig. 8) is unidentifiable with any extant specimen. The gall (pl. 111, fig. 9) is possibly the work of *P. immunis* Buckton, drawn from one sent by Lichtenstein; the galls on plate 112 (figs 1–3) are of *P. spirothecae* Passerini, also from Lichtenstein. The sexuales (pl. 112, figs 4–6) are unidentifiable with extant specimens. The originals of these figures are missing.

stellariae (Hardy), *Brachycolus* (1879 : 147, pl. 85). The only extant material named *stellariae* is *Holcaphis holci* Hille Ris Lambers (*468*, *469*) sent by Hardy from Wooler, Northumberland. Both Buckton and Hardy believed *stellariae* and *holci* (Hardy, *nomen nudum*) to be the same insect, which in summer migrated from *Stellaria* to *Holcus*.

subterranea Walker, *Aphis* (1879 : 38, pl. 47; 1883 : 105, pl. 130): aptera (pl. 47, fig. 5) = *Aphis sambuci* L. larva (*475*), alata (pl. 130, fig. 2) = *Anuraphis subterranea* (Walker) (*472–474*).

tanaceti (L.), *Siphonophora* (1876 : 151, pl. 23): aptera (fig. 1) = *Metopeurum fuscoviride* Stroyan (*476*), alata (fig. 2) = *Dactynotus* sp. indet. (not identifiable with a specimen).

tanaceticola (Kaltenbach), *Siphonophora* (1876 : 159, pl. 27) ? = *Dactynotus tanaceti* (L.) (*477*).

tanacetina Walker, *Aphis* (1879 : 63) = *Brachycaudus helichrysi* (Kaltenbach)

(*478, 479*). There are no published figures of *tanacetina*, but a sheet of coloured sketches of larva, nymphs and alata with accompanying notes agree with the specimens and the data of the two slides.

tiliae (L.), *Pterocallis* (1881 : 34, pl. 93) = *Eucallipterus tiliae* (L.) (*486–488*). The description and figure of the 'apterous viviparous female' appear to have been based on an ovipara on *486*.

trirhoda (Walker), *Hyalopterus* (1879 : 114, pl. 77) = *Longicaudus trirhodus* (Walker) (*490, 491*).

trivialis Passerini, *Tychea* (1883 : 86, pl. 127): ovipara (fig. 3) = *Geoica eragrostidis* (Passerini) apterous viviparous female (*531*), larva (fig. 4) = *Anoecia ?corni* (F.) group (*531*).

troglodytes von Heyden, *Trama* (1881 : 68, pl. 102) = mixture of *Trama troglodytes* von Heyden and *Neotrama caudata* (del Guercio) (*385, 386*).

tussilaginis (Walker), *Siphonophora* (1876 : 159, pl. 27) = *Dactynotus tussilaginis* (Walker) (*496*).

ulicis Walker, *Aphis*. Buckton (1879 : 84) regards *ulicis* as a 'variation' of *rumicis* L. (= *fabae* Scopoli). His apterae from furze on *498* are *ulicis* Walker.

ulmi (L.), *Schizoneura* (1881 : 97, pls 108, 109) = *Schizoneura ulmi* (L.) (*504, 506*).

ulmi DeGeer, *Tetraneura* (1881 : 131, pl. 114) = *Tetraneura ulmi* (L.) (*499, 500, 502, 503*). The ovipara (fig. 8) is drawn from a specimen probably sent to Buckton by Kessler from Kassel (*499*). The larva (fig. 10), bred from a migrant captured in flight, is one of several (*501*) which I believe to be *Prociphilus bumeliae* (Schrank) (cf. Mordvilko, 1935; 84, fig. 17). Unfortunately the parent migrant has not been preserved.

urticae (Kaltenbach), *Siphonophora* (1876 : 143, pl. 19) = *Microlophium carnosum* (Buckton) (*511, 512*).

urticaria Kaltenbach, *Aphis* (1879 : 50, pl. 51): apterous and alate viviparous females (figs 1, 4) = *Aphis urticata* F. (*509, W.1040*), nymph (fig. 3, from gooseberry according to MS notes) probably = *Aphis grossulariae* Kaltenbach (unidentifiable with a specimen).

viburni Schrank, *Aphis* (1879 : 77, pl. 61): apterous viviparous female (fig. 1) = *Aphis viburni* Scopoli (*515*), nymph (fig. 2) and alata (fig. 3) = *Ceruraphis eriophori* (Walker) (*516, 517*), alate male (fig. 4) = *Aphis fabae* Scopoli alate female (*422*), ovipara (fig. 5) = *Aphis fabae* Scopoli ovipara (*425*).

viminalis (Boyer de Fonscolombe), *Lachnus* (1881 : 53, pl. 99) = *Tuberolachnus salignus* (Gmelin) (*439–422*).

xylostei (Schrank), *Siphocoryne* (1879 : 25, pl. 44) = *Hyadaphis foeniculi* (Passerini) (*524*).

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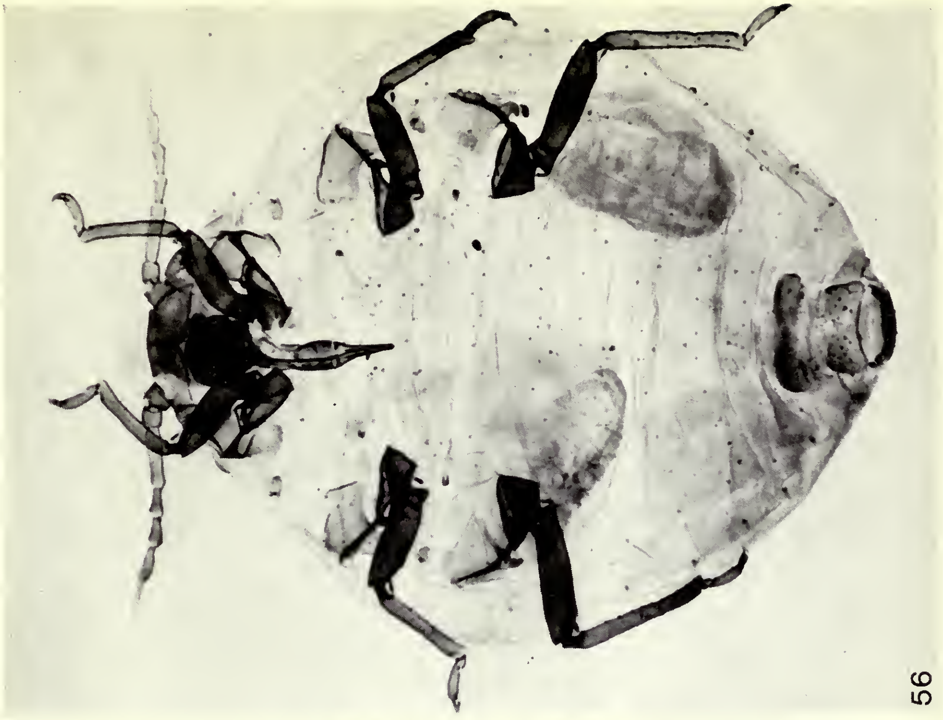
PLATE 1

Fig. 55. *Amphorophora ampullata* Buckton. Lectotype. *BMNH Neg. No. 54158.*
Fig. 56. *Cryptosiphum artemisiae* Buckton. Lectotype. *BMNH Neg. No. 54078.*



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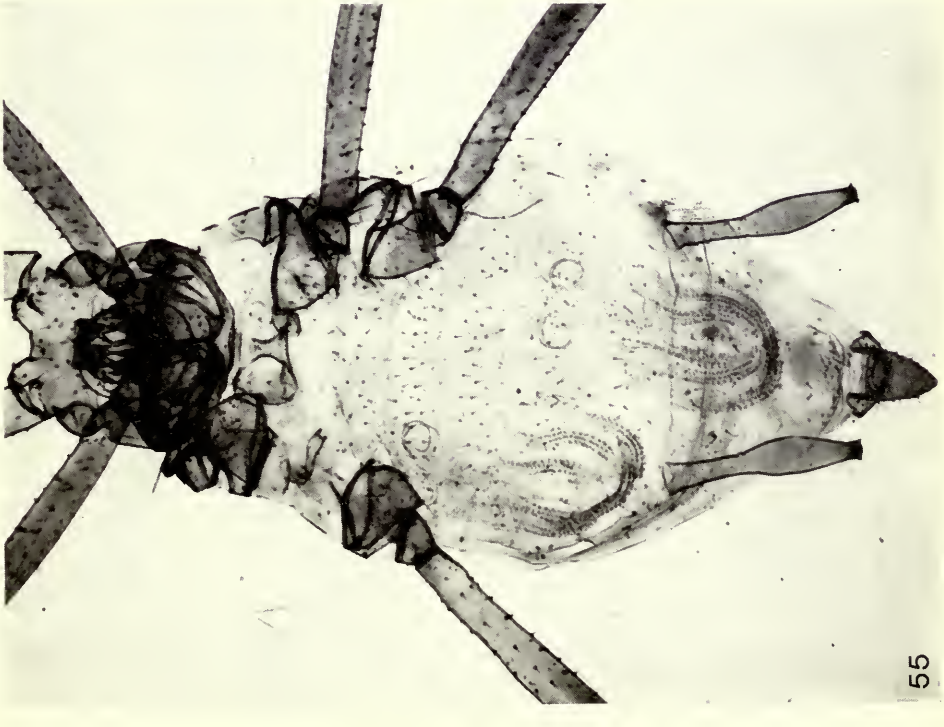

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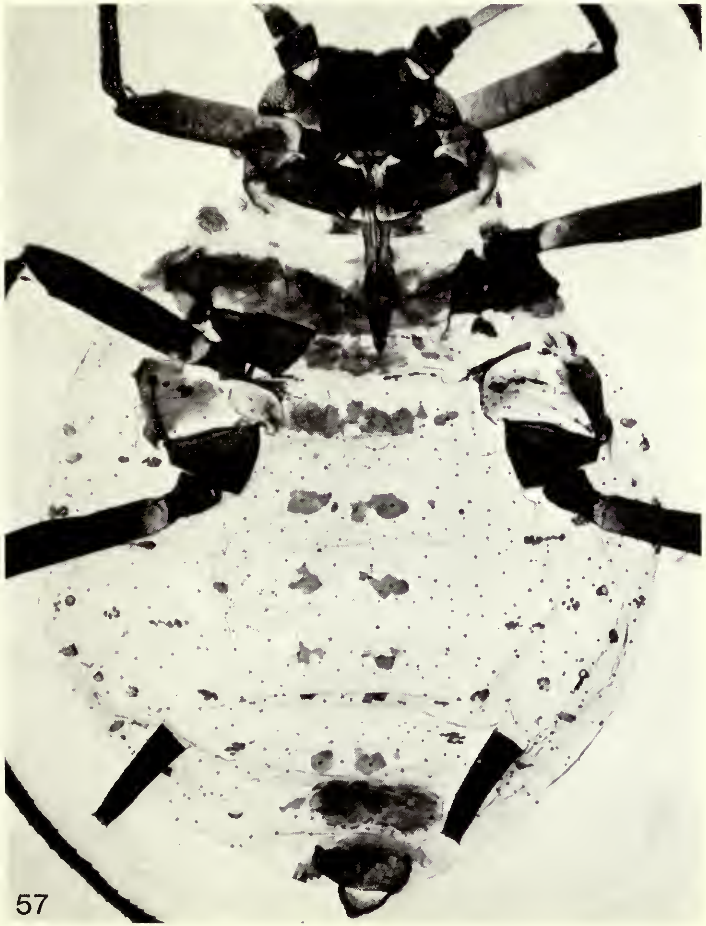
PLATE 2

FIG. 57. *Dysaphis (Pomaphis) aucupariae* (Buckton). Lectotype. *BMNH Neg. No. 54082.*
FIG. 58. *Astegopteryx bambusae* (Buckton). Lectotype. *BMNH Neg. No. 54193.*



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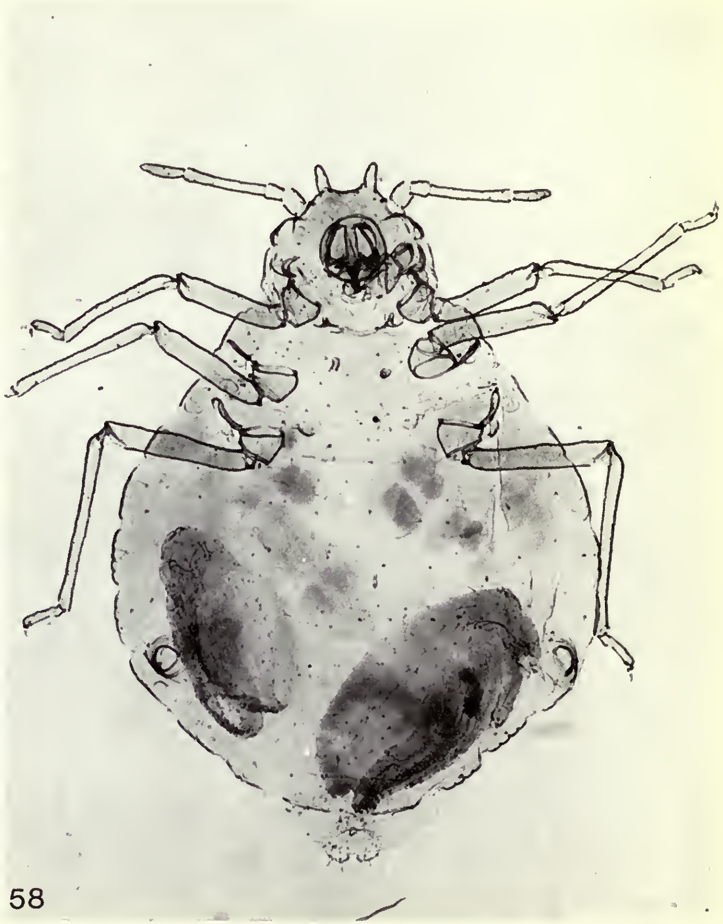

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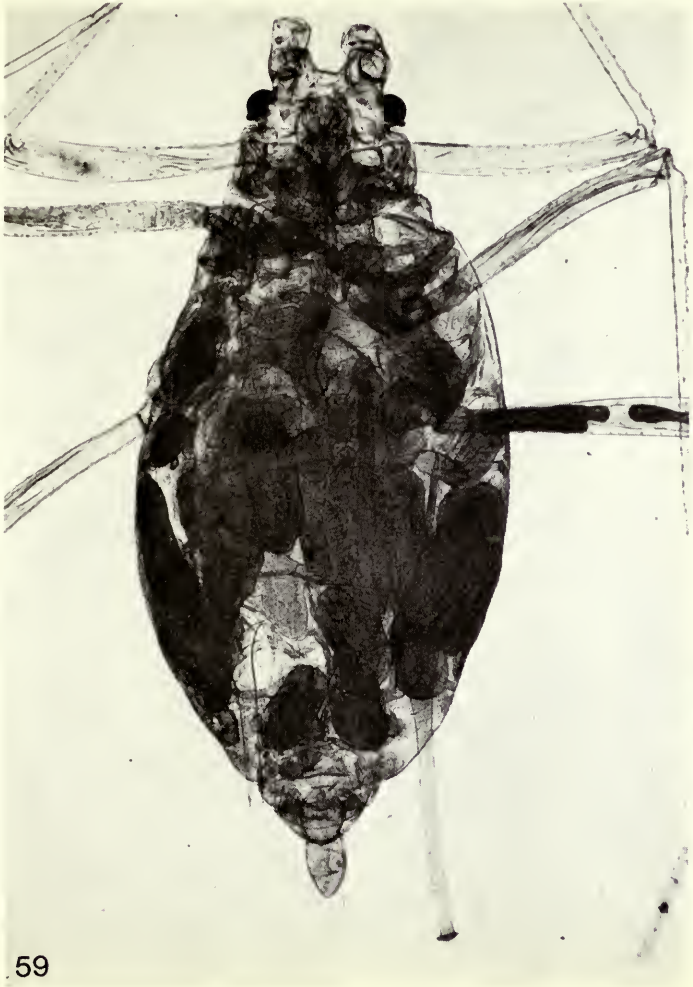
PLATE 3

FIG. 59. *Microlophium carnosum* (Buckton). Lectotype. *BMNH Neg. No. 54360.*

FIG. 60. *Aulacorthum* (*Neomyzus*) *circumflexum* (Buckton). Lectotype. *BMNH Neg. No. 54157.*



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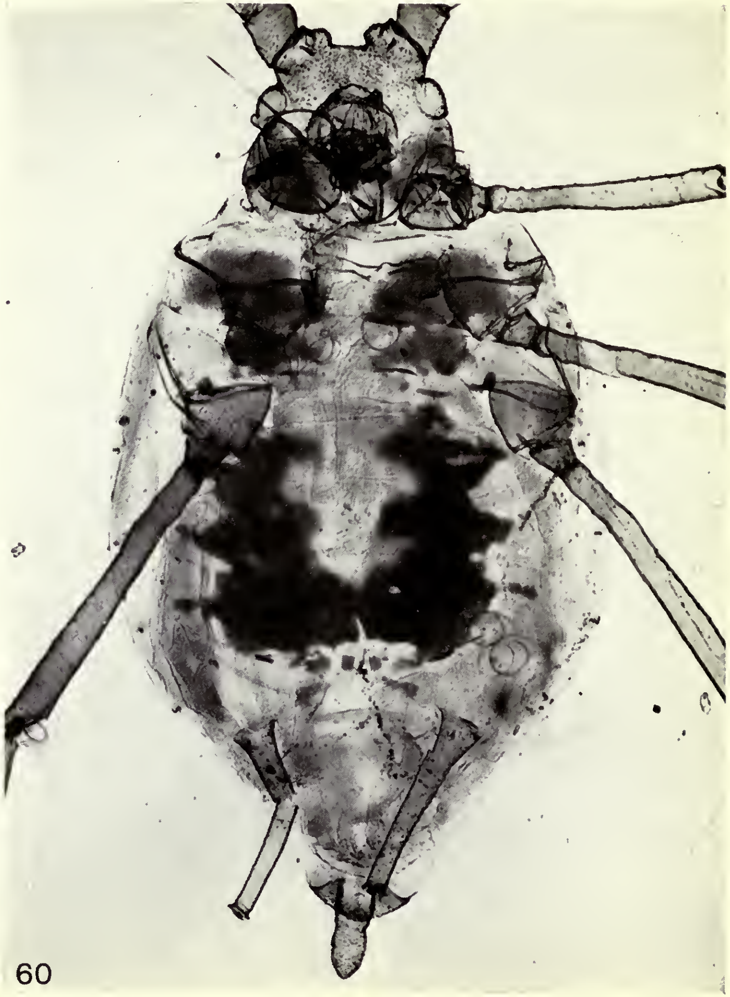

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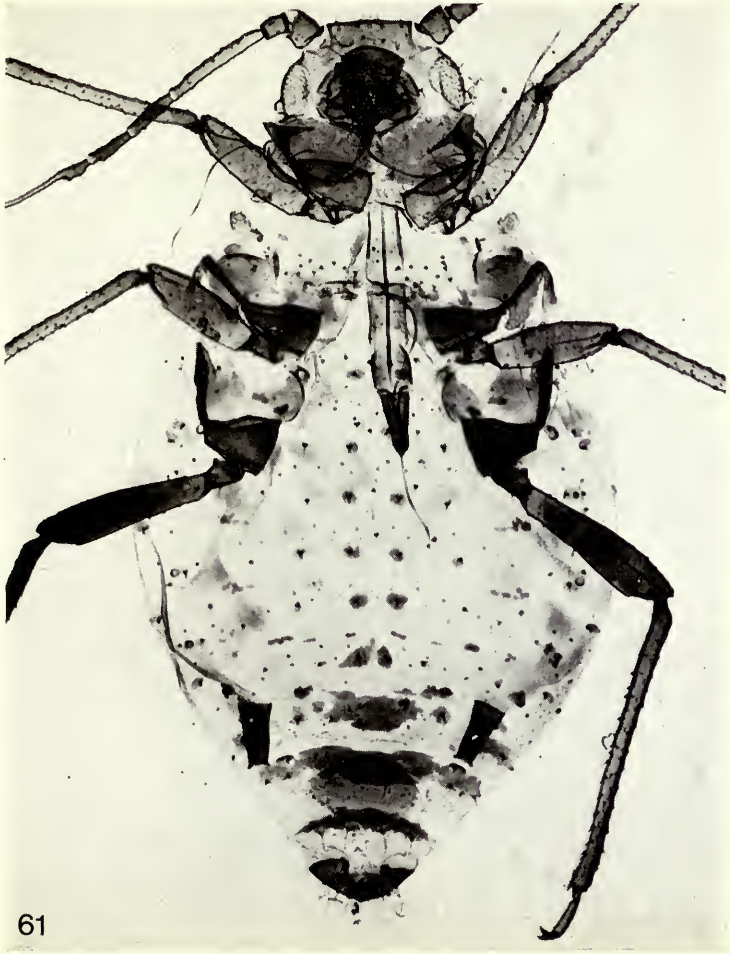
PLATE 4

FIG. 61. *Dysaphis crithmi* (Buckton). Lectotype. *BMNH Neg. No. 54079.*

FIG. 62. *Cinara* (*Cupressobium*) *cupressi* (Buckton). Lectotype. *BMNH Neg. No. 54081.*



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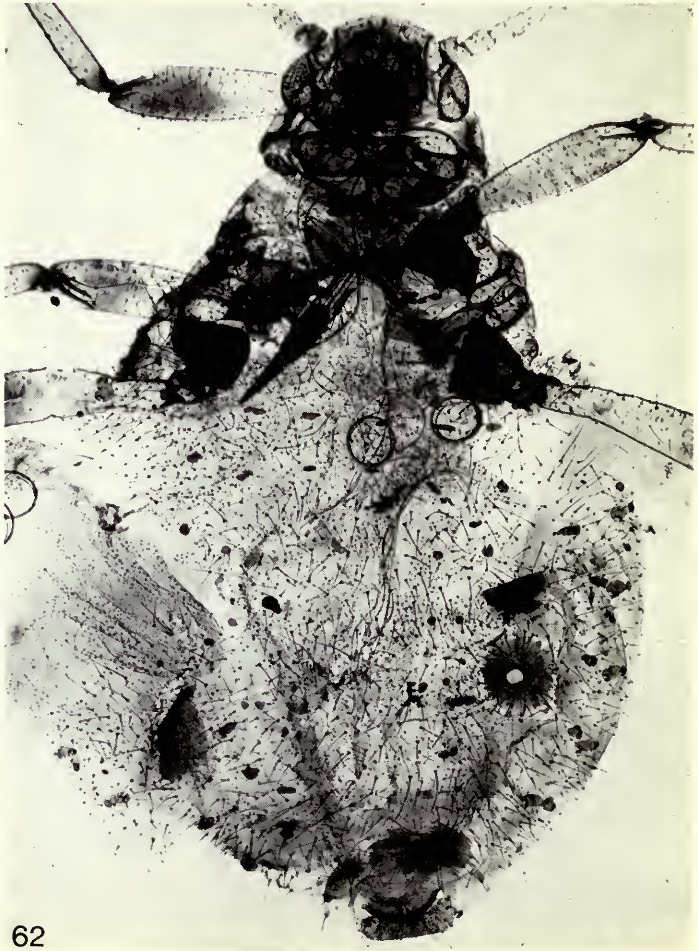

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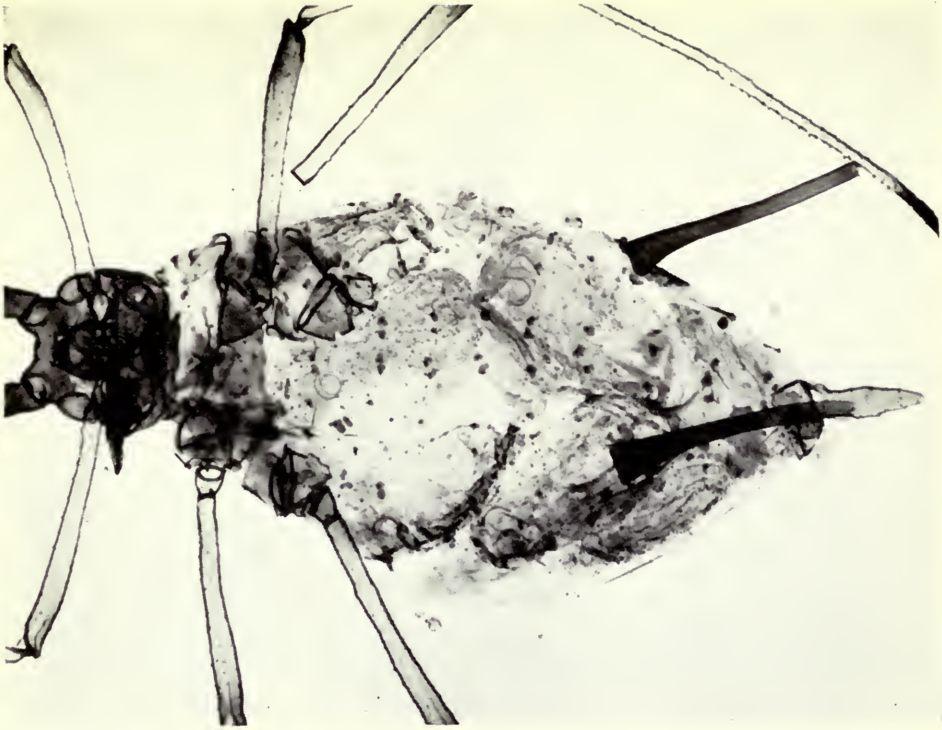
PLATE 5

FIG. 63. *Macrosiphum (Sitobion) luteum* (Buckton). Lectotype. *BMNH Neg. No. 54156.*
FIG. 64. *Dactynotus muralis* (Buckton). Lectotype. *BMNH Neg. No. 54190.*



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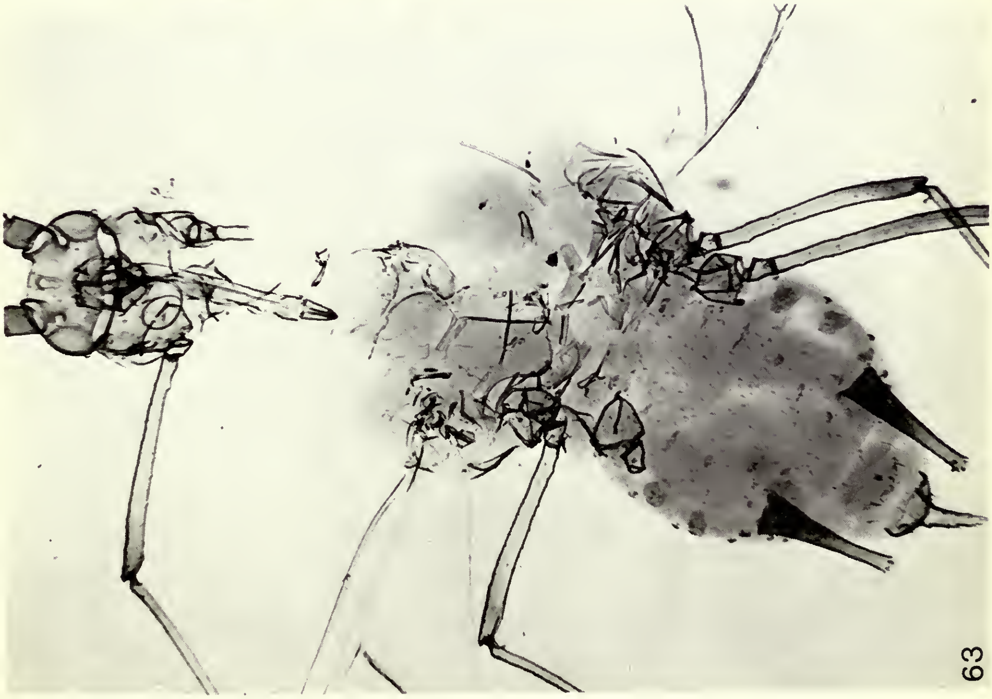

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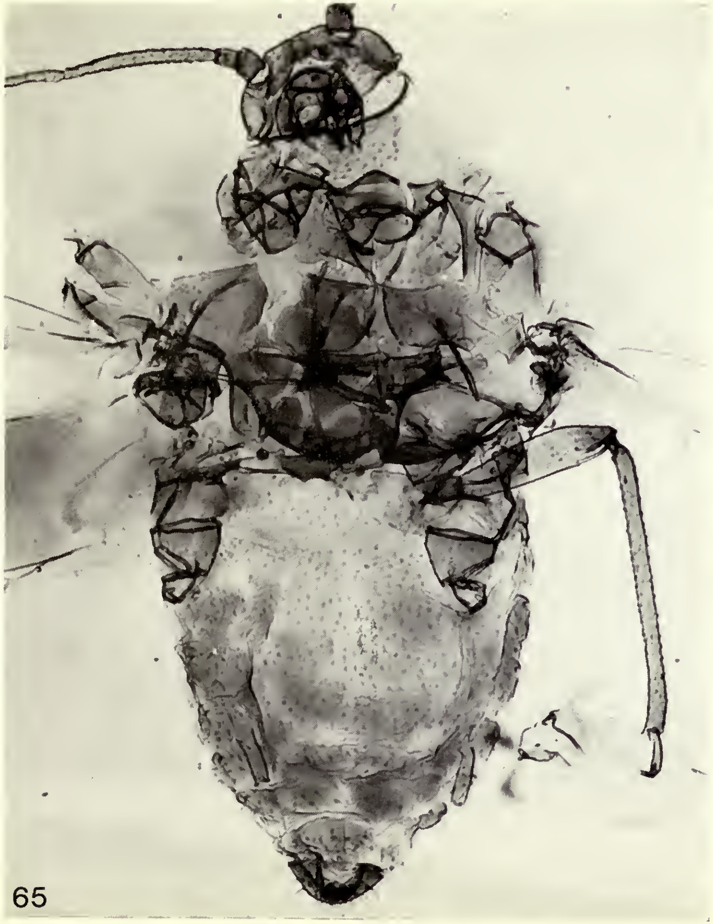
PLATE 6

Fig. 65. *Pterocomma pilosum* Buckton. Lectotype. *BMNH Neg. No. 54191.*
Fig. 66. *Megoura viciae* Buckton. Lectotype. *BMNH Neg. No. 54189.*



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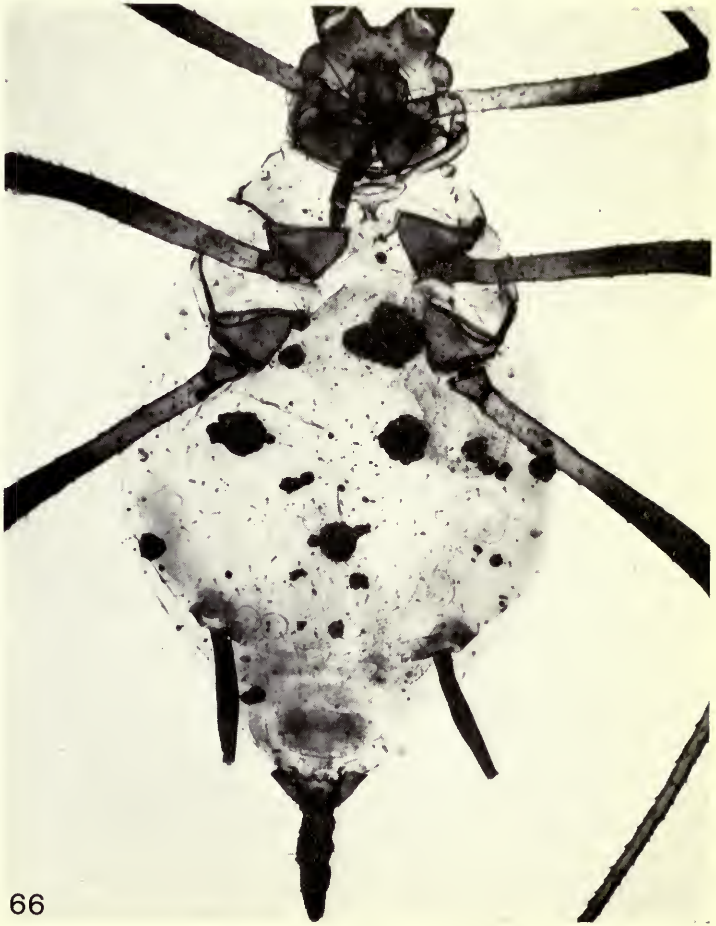

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NATURAL

A CATALOGUE OF THE GENUS-GROUP NAMES OF THE ZYGAENIDAE (LEPIDOPTERA)

W. G. TREMEWAN

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A CATALOGUE OF THE GENUS-GROUP NAMES OF THE ZYGAENIDAE (LEPIDOPTERA)

By W. G. TREMEWAN

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SYNOPSIS

All the genus-group names of the Zygaenidae (including variations in spelling) are listed alphabetically, with citations of their type-species. Bibliographical references are given to the original descriptions and to subsequent designations of type-species. Five new generic names are proposed to replace hitherto unrecognized junior homonyms, and four type-species are newly designated.

INTRODUCTION

THE following catalogue contains the genus-group names of the lepidopterous family Zygaenidae, comprising the subfamilies Anomoeotinae, Chalcosiinae, Charideinae, Himantopterinae, Phaudinae, Procridinae and Zygaeninae. Also included is the family Ratardidae which has recently been associated with the Zygaenidae (Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 340). A number of genera originally described in the Zygaenidae are currently placed in other families; these are normally included in the catalogue for the sake of completeness and are marked with an asterisk (*). However, genera were erroneously described in the Zygaenidae during the latter half of the last century, following an erroneous concept of the family which included the Ctenuchidae (= Syntomidae) and Arctiidae as subfamilies; such genera currently placed in the Ctenuchidae and Arctiidae are not included here.

The type-species of each genus is given and the mode of fixation of the type-species stated, i.e., by original designation, by monotypy, by subsequent designation, or by present designation.

Each generic name has been checked for homonymy in the catalogues of Neave (1939–66, *Nomencl. zool.* **1–6**). The following new names are proposed for hitherto unrecognized junior homonyms which cannot be replaced by junior synonyms:

Cerodendra **nom. n.** for *Dendrocera* Hampson, [1893];
Cleoda **nom. n.** for *Doclea* Walker, 1864;
Euclimaciopsis **nom. n.** for *Euclimacia* Jordan, 1913;
Monalita **nom. n.** for *Lamontia* Kaye, 1923;
Neoherpa **nom. n.** for *Herpa* Walker, 1854.

The following hitherto unrecognized junior homonyms are replaced by junior subjective synonyms:

Ninia Walker, 1856, by *Cicinnocnemis* Holland, 1893;
Northia Walker, 1854, by *Zama* Herrich-Schäffer, 1856;
Paraphlebia Felder, 1874, by *Phlebohecta* Hampson, [1893];
Rhaphidognatha Felder & Felder, 1862, by *Balataea* Walker, 1864.

The following junior homonyms are currently considered to be junior subjective synonyms:

Felderia Kirby, 1892, synonym of *Pyromorpha* Herrich-Schäffer, 1854;
Ino Leach, 1815, synonym of *Adscita* Retzius, 1783;
**Leptothrix* Heylaerts, 1892, synonym of *Chionaema* Herrich-Schäffer, 1856;
Libania Holik & Sheljuzhko, 1956, synonym of *Mesembrynus* Hübner, [1819].

The following junior homonym is replaced by a junior objective synonym:

**Chrysaor* Hübner, [1809], by *Belemnia* Walker, 1854.

Names that have been proposed expressly to replace junior homonyms, and junior objective synonyms that have been used for the same purpose, are referred to in this catalogue as objective replacement names. Junior subjective synonyms that have been used to replace preoccupied senior synonyms are referred to as subjective replacement names.

Where the type-species is now a junior synonym, the current valid name is given in square brackets. For the genera, only objective synonymy is provided (in the form of cross-references) unless different type-species of different genera are currently considered to be conspecific, when subjective synonymy is also expressed. When different type-species of different genera are currently considered to be congeneric, subjective synonymy is not expressed unless it is necessary to replace a generic junior homonym by a junior subjective synonym. Subjective synonymy is dealt with, though not comprehensively, by Bryk (1936, *in* Strand, *Lepid. Cat.* **71** : 95–332) and Alberti (1954, *Mitt. zool. Mus. Berl.* **30** : 115–480).

The references to the original descriptions of the genera and their type-species have been checked and, whenever possible, the dates of publication are taken from original wrappers. Dates of publication of the works of Hübner and Herrich-Schäffer follow Hemming (1940, *Hübner* **1**, **2**), and those of Esper follow Sherborn & Woodward (1901, *Ann. Mag. nat. Hist.* (7) **7** : 137–140). Abbreviations of titles of periodicals follow Brown & Stratton (1963–65, *World List of Scientific Periodicals*, 4th edition, 1900–1960); those not included in that work follow the *List of Serial Publications in the British Museum (Natural History) Library* (1968). Titles of books are also abbreviated according to the principles of the 4th edition of the *World List*. The full titles of all works referred to that are not included in these two *Lists* are given in the Bibliography.

The generic names are arranged in alphabetical order; junior homonyms, junior synonyms, unavailable names, etc., are cross-referenced under the senior name. Junior homonyms, junior objective synonyms and unavailable names (nomina nuda, rejected names and incorrect spellings) are in non-bold italics; unavailable names are marked with a double dagger (‡). The alphabetical entries of all other generic names are in bold italics, as are the names of their type-species. Fossil genera are marked with a single dagger (†).

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ALPHABETICAL CATALOGUE OF GENUS-GROUP NAMES

ACHELURA Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 56 (objective replacement name for *Chelura* Hope, 1841, nom. praeocc.).
Type-species: ***Chelura bifasciata*** Hope, 1841, *Trans. Linn. Soc. Lond.* **18** : 444, by monotypy of *Chelura* Hope, 1841.
See also: *Chelura* Hope, 1841.

ACOLOITHUS Clemens, 1860, *Proc. Acad. nat. Sci. Philad.* **1860** : 539.
Type-species: ***Acoloithus falsarius*** Clemens, 1860, *ibid.* **1860** : 539, by monotypy.

ACREAGRIS Felder, 1874, *in* Felder & Rogenhofer, *Reise öst. Fregatte Novara, Zool.* **2**(2), Lepid. 4, pl. 83, fig. 2; Erklärung der Tafeln LXXV bis CVII, p. [1] (nom. praeocc.).
Type-species: *Acreagris correbioides* Felder, 1874, *ibid.* 4, pl. 83, fig. 2, by monotypy.
Acreagris Felder, 1874, is a junior homonym of *Acreagris* Koch, 1845 (Insecta: Hemiptera); *Felderia* Kirby, 1892, which was proposed as the objective replacement name, is a junior homonym of *Felderia* Walsingham, 1887 (Lepidoptera, Tineidae). However, *Acreagris* Felder, 1874, is a junior subjective synonym of *Pyromorpha* Herrich-Schäffer, 1854. The type-species *Acreagris correbioides* Felder, 1874, is currently considered to be congeneric with *Pyromorpha dimidiata* Herrich-Schäffer, 1854, the type-species of *Pyromorpha* Herrich-Schäffer, 1854.

ADSCITA Retzius, 1783, *in* Degeer, *Genera et Species Insect.*: 8, 35.
Type-species: ***Adscita turcosa*** Retzius, 1783, *ibid.*: 35 [= *Sphinx statices* Linnaeus, 1758, *Syst. Nat.* ed. X, **1** : 495], by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 84.
See also: ‡*Atichia* Ochsenheimer, 1808; *Atychia* Ochsenheimer, 1808; *Bradyptesis* Sodoffsky, 1837; ‡*Chrysaor* Hübner, [1806]; *Ino* Leach, 1815; ‡*Jno* Püngeler, 1914; *Procris* Fabricius, 1807; ‡*Proeris* Pagenstecher, 1909.

AEACIS Hübner, [1819], *Verz. bekannt. Schmett.*: 117.
Type-species: ***Sphinx ephialtes*** Linnaeus, 1767, *Syst. Nat.* ed. XII, **1** : 806, by monotypy.

AETHIOPROCRIS Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 305.
Type-species: ***Aethioprocris togoensis*** Alberti, 1954, *ibid.* **30** : 306, by original designation and monotypy.

AGALOPE Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 437.
Type-species: ***Agalope basalis*** Walker, 1854, *ibid.* **2** : 438 [= *Chalcosia hyalina* Kollar, 1844, *in* Hügel, *Kaschmir und das Reich der Siek* **4**(2) : 462], by monotypy.

AGLAINO Staudinger, 1887, *in* Romanoff, *Mém. Lépid.* **3** : 171.
Type-species: ***Aglaino maerens*** Staudinger, 1887, *ibid.* **3** : 171, by monotypy.

AGLAOPE Latreille, 1809, *Genera Crustac. et Insect.* **4** : 214.
Type-species: ***Sphinx infausta*** Linnaeus, 1767, *Syst. Nat.* ed. XII, **1** : 807, by monotypy.
See also: ‡*Aglope* Boisduval, 1836.

‡*AGLOPE* Boisduval, 1836, *Hist. nat. Insectes, Species général Lépid.* **1** : 118.
An incorrect subsequent spelling of *Aglaope* Latreille, 1809.

AGROMENIA Agassiz, 1846, *Nomencl. zool. Index univ.*: 12.
Type-species: *Sphinx onobrychis* [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend*: 45 [= *Sphinx carniolica* Scopoli, 1763, *Ent. carniolica*: 189, fig. 478], by subsequent designation for *Agrumenia* Hübner, [1819].
An unjustified emendation of *Agrumenia* Hübner, [1819].

AGRUMENIA Hübner, [1819], *Verz. bekannt. Schmett.*: 116.
Type-species: ***Sphinx onobrychis*** [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend*: 45 [= *Sphinx carniolica* Scopoli, 1763, *Ent. carniolica*: 189, fig. 478], by subsequent designation: Tremewan, 1961, *Entomologist's Rec. J. Var.* **73** : 202.
See also: *Agromenia* Agassiz, 1846.

AGRUMENOIDEA Holik, 1937, *Ent. Z.* **51** : 132.
Type-species: ***Zygaena johannae*** Le Cerf, 1923, *Bull. Soc. ent. Fr.* **1923** : 224, by original designation and monotypy.
Proposed as a subgenus of *Zygaena* Fabricius, 1775. Not recorded by Neave (1939–66, *Nomencl. zool.* **1–6**).

****AGYRTA*** Hübner, [1820], *Verz. bekannt. Schmett.*: 177.
Type-species: *Sphinx auxo* Linnaeus sensu Hübner, [1817], *Samml. exot. Schmett.* **1**, pl. [185], figs 1, 2, by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 121.

The genus *Agyrta* Hübner, [1820], was erected for two nominal species, viz., *Sphinx auxo* Linnaeus, 1767, and *Phalaena caelestina* Stoll, [1781]. Under *auxo* Linnaeus, Hübner referred to his earlier interpretation of the species ([1817], *Samml. exot. Schmett.* **1**, pl. [185], figs 1–4), at the same time placing *Phalaena micilia* Cramer, [1779], in synonymy.

The true *Sphinx auxo* Linnaeus, 1767, is a species of Zygaenidae: Chalcosiinae described from China, whereas the specimens figured under this name by Hübner represent two South American species of the family Ctenuchidae (= Syntomidae). It should be noted that figs 1 and 2 represent a misidentification of *auxo* Linnaeus, and that figs 3 and 4 represent *micilia* Cramer, which is a distinct species. Kirby (loc. cit.) recognized that Hübner figured two different species under the same name, but like Hübner, misidentified *Sphinx auxo* Linnaeus, which is cited as the type-species of *Agyrta* Hübner.

It follows that the type-species of *Agyrta* Hübner, [1820], is *Sphinx auxo* Linnaeus sensu Hübner, [1817], by subsequent designation by Kirby (1892, loc. cit.). This misidentified species is at present without a name, as no synonym is apparently available. The genus *Agyrta* Hübner, [1820], remains in the Ctenuchidae as originally placed by Kirby, while the true *Sphinx auxo* Linnaeus, 1767, should be placed in the Zygaenidae: Chalcosiinae as a synonym of *Sphinx pectinicornis* Linnaeus, 1758 (Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** :220)

AKESINA Moore, 1888, *Proc. zool. Soc. Lond.* **1888** : 395.
Type-species: ***Akesina basalis*** Moore, 1888, *ibid.* **1888** : 396, by monotypy.
Originally described in the Psychidae but subsequently transferred to the Zygaenidae (Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 8).
See also: ‡*Anesina* Kirby, 1892.

ALLOBREMERIA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 277.
Type-species: ***Allobremeria plurilineata*** Alberti, 1954, *ibid.* **30** : 277, by original designation and monotypy.

ALLOCAPRIMA Hering, 1922, *Arch. Naturgesch.* **88**(A)11 : 10 [key], 79.
Type-species: ***Pidorus tricoloratus*** Semper, 1898, *Schmett. Philippinischen Inseln* **2** : 431, by original designation and monotypy.

ALLOCYCLOSIA Hering, 1922, *Arch. Naturgesch.* **88**(A)11 : 6 [key], 68.
Type-species: ***Allocyclosia porphyropyga*** Hering, 1922, *ibid.* **88**(A)11 : 69, by original designation and monotypy.

ALLOPROCRIS Hering, 1925, *Stettin. ent. Ztg* **86** : 84.
Type-species: ***Alloprocris draesekei*** Hering, 1925, *ibid.* **86** : 84, by original designation and monotypy.

ALOPHOGASTER Hampson, [1893], *Fauna Br. India, Moths* **1** : 287.
Type-species: ***Alophogaster rubribasis*** Hampson, [1893], *ibid.* **1** : 287, by original designation and monotypy.

ALTERAMENELIKIA Alberti, 1971, *Mitt. zool. Mus. Berl.* **47** : 239 (objective replacement name for *Menelikia* Alberti, 1954, nom. praeocc.).
Type-species: ***Menelikia jordani*** Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 309, by original designation for and monotypy of *Menelikia* Alberti, 1954.
See also: *Menelikia* Alberti, 1954.

ALTERASVENIA Alberti, 1971, *Mitt. zool. Mus. Berl.* **47** : 239 (objective replacement name for *Svenia* Alberti, 1954, nom. praeocc.).
Type-species: ***Northia ulmivora*** Graeser, 1888, *Berl. ent. Z.* **32** : 107, by original designation for *Svenia* Alberti, 1954.
See also: *Svenia* Alberti, 1954.

AMALTHOCERA Boisduval, 1836, *Hist. nat. Insectes, Species général Lépid.* **1,** pl. 14, fig. 8, [legend to plates]: 4.
Type-species: ***Amalthocera tiphys*** Boisduval, 1836, *ibid.* **1,** pl. 14, fig. 8, [legend to plates]: 4, by monotypy.
See also: *Amathocera* Agassiz, 1846; *Callibaptes* Jordan, 1907.

AMATHOCERA Agassiz, 1846, *Nomencl. zool. Index univ.*: 15, 16.
Type-species: *Amalthocera tiphys* Boisduval, 1836, *Hist. nat. Insectes, Species général Lépid.* **1,** pl. 14, fig. 8, [legend to plates]: 4, by monotypy of *Amalthocera* Boisduval, 1836.
An unjustified emendation of *Amalthocera* Boisduval, 1836.

AMESIA Duncan, 1841, *in* Jardine, *Naturalist's Library* **33**, *Ent., Exot. Moths* 7 : 93.
Type-species: ***Phalaena sanguiflua*** Drury, 1773, *Ill. exot. Insects* **2** : 35, Index, p. [91], pl. 20, figs 1, 2, by monotypy.

AMURIA Staudinger, 1887, *in* Romanoff, *Mém. Lépid.* **3** : 172.
Type-species: ***Amuria cyclops*** Staudinger, 1887, *ibid.* **3** : 172, by monotypy.

‡*ANAMOEOTES* Holland, 1893, *Psyche, Camb.* **6** : 373.
An incorrect subsequent spelling of *Anomoeotes* Felder, 1874.

ANARBUDAS Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 14.
Type-species: ***Anarbudas insignis*** Jordan, 1907, *ibid.* **10** : 14, by original designation.

ANCISTROCERON Semper, 1898, *Schmett. Philippinischen Inseln* **2** : 427.
Type-species: ***Ancistroceron glaucon*** Semper, 1898, *ibid.* **2** : 427, by monotypy.

‡*ANESINA* Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 504.
An incorrect subsequent spelling of *Akesina* Moore, 1888.

ANKASOCRIS Viette, 1965, *Bull. mens. Soc. linn. Lyon* **34** : 122.
Type-species: ***Ankasocris striatus*** Viette, 1965, *ibid.* **34** : 123, by original designation and monotypy.

‡*ANOMOCOETES* Strand, 1912, *Arch. Naturgesch.* **78**(A)12 : 58.
An incorrect subsequent spelling of *Anomoeotes* Felder, 1874.

***ANOMOCOETIDIA** Strand, 1912, *Arch. Naturgesch.* **78**(A)12 : 58.

Type-species: ***Anomocoetidia basifulva*** Strand, 1912, *ibid.* **78**(A)12 : 58, by monotypy.

Originally described in the Zygaenidae; subsequently transferred to the Geometridae (Hering, 1927, *in* Seitz, *Gross-Schmett. Erde* **14** : 198).

ANOMOEOTES Felder, 1874, *in* Felder & Rogenhofer, *Reise öst. Fregatte Novara, Zool.* **2**(2), Lepid 4, pl. 100, fig. 5; Erklärung der Tafeln LXXV bis CVII, p. 1.

Type-species: ***Anomoeotes levis*** Felder, 1874, *ibid.* 4, pl. 100, fig. 5, by monotypy.

See also: ‡*Anamoeotes* Holland, 1893; ‡*Anomocoetes* Strand, 1912.

ANTERIS Wallengren, 1865, *K. svenska VetenskAkad. Handl.* (N.F.) **5**(4) : 16 (nom. praeocc.).

Type-species: *Neurosymploca zelleri* Wallengren, 1860, *Wien. ent. Monatschr.* **4** : 39, by original designation and monotypy.

Anteris Wallengren, 1865, is a junior homonym of *Anteris* Foerster, 1856 (Insecta: Hymenoptera); *Zutulba* Kirby, 1892 was proposed as the objective replacement name.

ANTHILARIA Hübner, [1819], *Verz. bekannt. Schmett.*: 117.

Type-species: ***Sphinx spicae*** Hübner, [1796], *Samml. eur. Schmett.* **2** : 17, pl. 4, fig. 25 [= *Sphinx lavandulae* Esper, [1783], *Schmett.* **2** : 221, pl. 34, fig. 2], by PRESENT DESIGNATION.

The designation of *Sphinx lavandulae* Esper, [1783] by Tremewan (1961, *Entomologist's Rec. J. Var.* **73** : 202) is incomplete and therefore invalid. Hübner ([1819] : 117) included two nominal species, *Sphinx spicae* Hübner and *Sphinx lavandulae* Esper, but misidentified the latter. The first included nominal species, *Sphinx spicae* Hübner, is synonymous with the true *Sphinx lavandulae* Esper; the second, *Sphinx lavandulae* Esper sensu Hübner, is synonymous with *stoechadis* Borkhausen, a subspecies of *filipendulae* Linnaeus.

When Tremewan designated *Sphinx lavandulae* Esper as the type-species, it was not realised that Hübner's interpretation of this species was in fact a misidentification; it follows that the included nominal species *Sphinx spicae* Hübner [= *Sphinx lavandulae* Esper] should have been cited, as designated above.

ANTHRACOCERA Agassiz, 1846, *Nomencl. zool. Index univ.*: 26.

Type-species: *Sphinx filipendulae* Linnaeus, 1758, *Syst. Nat.* ed. X, **1** : 494, by monotypy of *Anthrocera* Scopoli, 1777.

An unjustified emendation of *Anthrocera* Scopoli, 1777.

ANTHROCERA Scopoli, 1777, *Introductio Hist. nat.*: 414.

Type-species: *Sphinx filipendulae* Linnaeus, 1758, *Syst. Nat.* ed. X, **1** : 494, by monotypy.

Anthrocera Scopoli, 1777, is a junior objective synonym of *Zygaena* Fabricius, 1775.

APHANTOCEPHALA Felder, 1861, *Sber. Akad. Wiss. Wien* **43**(1) : 30.

Type-species: ***Aphantocephala moluccarum*** Felder, 1861, *ibid.* **43**(1): 30, by monotypy.

ARACHOTIA Moore, 1879, *in* Hewitson & Moore, *Descr. new Indian lepid. Insects Colln Atkinson*: 14.

Type-species: ***Arachotia flaviplaga*** Moore, 1879, *ibid.*: 14, by monotypy.

ARAEOCERA Hampson, [1893], *Fauna Br. India, Moths* **1** : 244.

Type-species: ***Araeocera cyanescens*** Hampson, [1893], *ibid.* **1** : 244, by original designation.

ARBUDAS Moore, 1879, *in* Hewitson & Moore, *Descr. new Indian lepid. Insects Colln Atkinson*: 19.

Type-species: ***Arbudas bicolor*** Moore, 1879, *ibid.*: 20, by monotypy.

***ARCTOZYGAENA** Gaede, 1926, *in* Seitz, *Gross-Schmett. Erde* **14** : 35.

Type-species: ***Arctozygaena quinquemaculata*** Gaede, 1926, *ibid.* **14** : 35, by monotypy.

Originally described in the Zygaenidae; subsequently transferred to the Limacodidae [= Cochlidiidae] (Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 344).

ARICHALCA Wallengren, 1858, *Öfvers. K. VetenskAkad. Förh. Stockh.* **15** : 137.
Type-species: ***Arichalca melanopyga*** Wallengren, 1858, *ibid.* **15** : 137 [= *Arniocera auriguttata* Hopffer, 1857, *Mber. K. preuss. Akad. Wiss.* **1857** : 421], by original designation and monotypy.
Arichalca Wallengren, 1858, is a junior subjective synonym of *Arniocera* Hopffer, 1857. The type-species *Arichalca melanopyga* Wallengren, 1858 is currently considered to be conspecific with *Arniocera auriguttata* Hopffer, 1857, the type-species of *Arniocera* Hopffer.

‡*ARICHALEA* Hampson, 1918, *Novit. zool.* **25** : 381.
An incorrect subsequent spelling of *Arichalca* Wallengren, 1858.

ARNIOCERA Hopffer, 1857, *Mber. K. preuss. Akad. Wiss.* **1857** : 421.
Type-species: ***Arniocera auriguttata*** Hopffer, 1857, *ibid.* **1857** : 421, by monotypy.
See also: *Arichalca* Wallengren, 1858; ‡*Arichalea* Hampson, 1918.

ARTONA Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 439.
Type-species: ***Artona discivitta*** Walker, 1854, *ibid.* **2** : 440, by monotypy.

ASTYLONEURA Gaede, 1914, *Int. ent. Z.* **8** : 53.
Type-species: ***Astyloneura trefurthi*** Gaede, 1914, *ibid.* **8** : 53, by monotypy.

ATELESIA Jordan, 1930, *Novit. zool.* **35** : 284.
Type-species: ***Atelesia nervosa*** Jordan, 1930, *ibid.* **35** : 284, by original designation and monotypy.

‡*ATICHIA* Ochsenheimer, 1808, *Schmett. Eur.* **2** : 11.
An incorrect original spelling of the multiple original spelling of *Atychia* Ochsenheimer, 1808.

ATYCHIA Ochsenheimer, 1808, *Schmett. Eur.* **2** : [9], [10]; 11 (as *Atichia*).
Type-species: ***Sphinx statices*** Linnaeus, 1758, *Syst. Nat.* ed. X, **1** : 495, by PRESENT DESIGNATION.
Atychia Ochsenheimer, 1808, is a junior subjective synonym of *Adscita* Retzius, 1783. The type-species, *Sphinx statices* Linnaeus, 1758, is currently considered to be conspecific with *Adscita turcosa* Retzius, 1783, the type-species of *Adscita* Retzius.
The designation of *Sphinx statices* Linnaeus by Boisduval (1836, *Species général Lépid.* **1** : 134) is invalid. According to the provisions of the Code (*Int. Code zool. Nomencl.*, Article 69 (a) (iii)) an author is considered to have designated one of the originally included nominal species as type-species, if he states that it is the type, and if it is clear that he himself accepts it as type-species. In the introduction to his work Boisduval reviewed earlier classifications and designated up to at least four different type-species for each genus, and cited no type-species for the genera used by him in his own classification. The type-species designations by Boisduval do not conform with the provisions of the Code and are therefore invalid.

BALATAEA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **31** : 110.
Type-species: ***Balataea aegerioides*** Walker, 1864, *ibid.* **31** : 111 [= *Euchromia octomaculata* Bremer, 1861, *Bull. scient. Acad. Sci. St. Petersb.* **3** : 476], by monotypy.
A current subjective replacement name for *Rhapidognatha* Felder & Felder 1862.
See also: ‡*Balatea* Bryk, 1936; *Rhaphidognatha* Felder & Felder, 1862.

‡*BALATEA* Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 306.
An incorrect subsequent spelling of *Balataea* Walker, 1864.

BARBAROSCIA Hering, 1922, *Arch. Naturgesch.* **88**(A)11 : 10 [key], 66.
Type-species: ***Pidorus amabilis*** Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 36, pl. 6f, by original designation and monotypy.

BIEZANKOIA Strand, 1936, *Folia zool. hydrobiol.* **9** : 167 (objective replacement name for *Polymorpha* Burgeff, 1926, nom. praeocc.).
Type-species: ***Sphinx transalpina*** Esper, [1781], *Schmett.* **2** : 142, by subsequent designation for *Polymorpha* Burgeff, 1926.
See also: *Burgeffia* Holik & Sheljuzhko, 1958; *Polymorpha* Burgeff, 1926.

BINTHA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **31** : 127.
Type-species: ***Bintha gracilis*** Walker, 1864, *ibid.* **31** : 127, by monotypy.

BIRTINA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **31** : 125.
Type-species: ***Birtina lycaenoides*** Walker, 1864, *ibid.* **31** : 125, by monotypy.
See also: ‡*Birtisa* Bryk, 1936.

‡*BIRTISA* Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 142, 306.
An incorrect subsequent spelling of *Birtina* Walker, 1864.

****BOISDUVALODES*** Viette, 1955, *Lambillionea* **55** : 97 (objective replacement name for *Perrotia* Oberthür, 1922, nom. praeocc.).
Type-species: ***Perrotia tamatavana*** Oberthür, 1922, *Étud. Lépid. comp.* **19**(1) : 153, by monotypy of *Perrotia* Oberthür, 1922.
Proposed as the objective replacement name for *Perrotia* Oberthür, 1922, which was originally described in the Megalopygidae; subsequently transferred to the Zygaenidae: Phaudinae (Jordan, 1928, *Novit. zool.* **34** : 132), and to the Zygaenidae: Anomoeotinae (Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 201). Here transferred to the Somabrachyidae (Tams, in litt.).
Not recorded by Neave (1939–66, *Nomencl. zool.* **1–6**).
See also: **Perrotia* Oberthür, 1922.

BORADIA Moore, 1879, *Proc. zool. Soc. Lond.* **1879** : 391.
Type-species: ***Boradia carneola*** Moore, 1879, *ibid.* **1879** : 392, by monotypy.

BORADIOPSIS Hering, 1922, *Arch. Naturgesch.* **88**(A)11 : 10 [key], 47.
Type-species: ***Boradia grisea*** Semper, 1898, *Schmett. Philippinischen Inseln* **2** : 436, by original designation and monotypy.

BRACHARTONA Hampson, 1891, *Ill. typical Specimens Lepid. Heterocera Colln Br. Mus.* **8** : 44.
Type-species: ***Artona quadrimaculata*** Moore, 1879, *Proc. zool. Soc. Lond.* **1879** : 390, by original designation.

BRADYPTESIS Sodoffsky, 1837, *Bull. Soc. Nat. Moscou* (6) *Etym. Unters.*: 10 (objective replacement name for *Atychia* Ochsenheimer, 1808).
Type-species: ***Sphinx statices*** Linnaeus, 1758, *Syst. Nat.* ed. X, **1** : 495, by subsequent designation for *Atychia* Ochsenheimer, 1808.
Bradyptesis Sodoffsky, 1837, is an unnecessary replacement name for *Atychia* Ochsenheimer, 1808, which was considered to be inapplicable to its included nominal species, and is a junior subjective synonym of *Adscita* Retzius, 1783. The type-species *Sphinx statices* Linnaeus, 1758, is currently considered to be conspecific with *Adscita turcosa* Retzius, 1783, the type-species of *Adscita* Retzius.

BREMERIA Alphéraky, 1892, *in* Romanoff, *Mém. Lépid.* **6** : 7.
Type-species: ***Bremeria manza*** Alphéraky, 1892, *ibid.* **6** : 7, by monotypy.

BURGEFFIA Holik & Sheljuzhko, 1958, *Mitt. münch. ent. Ges.* **48** : 229 (objective replacement name for *Polymorpha* Burgeff, 1926, nom. praeocc.).
Type-species: *Sphinx transalpina* Esper, [1781], *Schmett.* **2** : 142, by subsequent designation for *Polymorpha* Burgeff, 1926.
Burgeffia Holik & Sheljuzhko, 1958, is an unnecessary replacement name for *Polymorpha* Burgeff, 1926, which has been replaced by *Biezankoia* Strand, 1936.

BYBLISIA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **31** : 107.
Type-species: ***Byblisia latipes*** Walker, 1864, *ibid.* **31** : 107, by monotypy.

CADPHISES Moore, 1865, *Proc. zool. Soc. Lond.* **1865** : 800.
Type-species: ***Cadphises maculata*** Moore, 1865, *ibid.* **1865** : 801, by monotypy.

‡*CAEMENTA* Hampson, 1907, *Novit. zool.* **14** : 328.
An incorrect subsequent spelling of *Coementa* Druce, 1885.

***CAFFRICOLA** Hampson, 1920, *Novit. zool.* **26** : 280.
Type-species: **Phalaena Bombyx cloeckneria** Stoll, [1781], *in* Cramer, *Uitl. Kapellen* **4** : 111, 248, pl. 348, fig. A, by original designation and monotypy.
Originally described in the Zygaenidae: Zygaeninae, subsequently transferred to the Limacodidae [= Cochlidiidae] (Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 344).

CALLAMESIA Butler, 1885, *Ann. Mag. nat. Hist.* (5)**16** : 345.
Type-species: *Epyrgis midamia* Herrich-Schäffer, 1853, *Samml. aussereur. Schmett.* **1**, pl. 2, fig. 7 [as *midama* (incorrect original spelling)]; 1856, *ibid.* **1** : 7; 1858, *ibid.* **1** : 57, by original designation and monotypy.
Callamesia Butler, 1885, is a junior objective synonym of *Epyrgis* Herrich-Schäffer, 1853.

***CALLARTONA** Hampson, [1893], *Fauna Br. India, Moths* **1** : 233.
Type-species: **Callartona purpurascens** Hampson, [1893], *ibid.* **1** : 233, by original designation and monotypy.
Originally described in the Zygaenidae; subsequently transferred to the Plutellidae (Meyrick, 1906, *Trans. ent. Soc. Lond.* **1906** : 170, 193) and finally to the Glyphipterigidae (Meyrick, 1914, *in* Wytsman, *Genera Insect.* **164** : 8, 10).

CALLIBAPTES Jordan, 1907, *Entomologist* **40** : 126.
Type-species: **Callibaptes ornata** Jordan, 1907, *ibid.* **40** : 127 [= *Amalthocera tiphys* Boisduval, 1836, *Hist. nat. Insectes, Species général Lépid.* **1**, pl. 14, fig. 8], by monotypy.
Callibaptes Jordan, 1907, is a junior subjective synonym of *Amalthocera* Boisduval, 1836. The type-species *Callibaptes ornata* Jordan, 1907, is currently considered to be conspecific with *Amalthocera tiphys* Boisduval, 1836, the type-species of *Amalthocera* Boisduval.

CALLIZYGAENA Felder, 1874, *in* Felder & Rogenhofer, *Reise öst. Fregatte Novara, Zool.* **2**(2), Lepid. 4, pl. 83, fig. 4; Erklärung der Tafeln LXXV bis CVII, p. 2.
Type-species: **Callizygaena nivimacula** Felder, 1874, *ibid.* 4, pl. 83, fig. 4 [= *Sphinx auratus* Stoll, [1779], *in* Cramer, *Uitl. Kapellen* **3** : 126; [1780], *ibid.* **3** : 173, pl. 264, fig. A], by monotypy.

***CALLOSIOPE** Hering, 1925, *Mitt. zool. Mus. Berl.* **12** : 156.
Type-species: **Callosiope banghaasi** Hering, 1925, *ibid.* **12** : 157, fig. 5, by original designation and monotypy.
Originally described and currently placed in the Ratardidae.

‡*CAMPILOTES* Oberthür, 1925, *Étud. Lépid. comp.* **23** : 59.
An incorrect subsequent spelling of *Campylotes* Westwood, 1840.

CAMPYLOTES Westwood, (vii.) 1840, *Madras J. Lit. & Sci.* **12** : 131; 1840, *in* Royle, *Ill. Bot. nat. Hist. Himalayan Mountains and Flora of Cashmere*: liii.
Type-species: **Campylotes histrionicus** Westwood, 1840, *ibid.* **12** : 131, by monotypy.
See also: ‡*Campilotes* Oberthür, 1925.

CANERCES Hampson, [1893], *Fauna Br. India, Moths* **1** : 281.
Type-species: *Canerkes euschemoides* Moore, 1865, *Proc. zool. Soc. Lond.* **1865** : 802, by monotypy of *Canerkes* Moore, 1865.
An unjustified emendation of *Canerkes* Moore, 1865.

CANERKES Moore, 1865, *Proc. zool. Soc. Lond.* **1865** : 802.
Type-species: *Canerkes euschemoides* Moore, 1865, *ibid.* **1865** : 802, by monotypy.
See also: *Canerces* Hampson, [1893]; ‡*Caneroes* Bryk, 1936.

‡*CANEROES* Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 193.
An incorrect subsequent spelling of *Canerkes* Moore, 1865.

CAPRIMA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **31** : 128.
Type-species: **Caprima gelida** Walker, 1864, *ibid.* **31** : 129, by monotypy.
See also: ‡*Caprina* Oberthür, 1894.

‡*CAPRINA* Oberthür, 1894, *Étud. Ent.* **19** : 28.
An incorrect subsequent spelling of *Caprima* Walker, 1864.

CERODENDRA **nom. n.** for *Dendrocera* Hampson, [1893] (nom. praeocc.).

Type-species: ***Dendrocera quadripunctata*** Hampson, [1893], *Fauna Br. India, Moths* **1** : 231, by original designation for and monotypy of *Dendrocera* Hampson, [1893].

See also: *Dendrocera* Hampson, [1893].

‡*CHALCONIA* Lucas, 1902, *Arch. Naturgesch.* **65**(2)2 : 699.

An incorrect subsequent spelling of *Chalcosia* Hübner, [1819].

CHALCONYCLES Jordan, 1907, *Entomologist* **40** : 123.

Type-species: ***Chalconycles vetulina*** Jordan, 1907, *ibid.* **40** : 124, by monotypy.

CHALCOPHAEDRA Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 39.

Type-species: ***Gynautocera zuleika*** Doubleday, 1847, *Ann. Mag. nat. Hist.* (1)**19** : 76, pl. 7, fig. 4, by monotypy.

CHALCOSIA Hübner, [1819], *Verz. bekannt. Schmett.*: 173.

Type-species: ***Sphinx pectinicornis*** Linnaeus, 1758, *Syst. Nat.* ed. X, **1** : 495, by subsequent designation: Hampson, [1893], *Fauna Br. India, Moths* **1** : 264, 266.

Hampson (loc. cit.) designates *thallo* Linnaeus as the type-species and places *pectinicornis* Linnaeus in synonymy, referring the latter to the XII edition (1767).

See also: ‡*Chalconia* Lucas, 1902; ‡*Chaleosia* Bryk, 1936; *Charmona* Billberg, 1820.

CHALCOSIOPSIS Swinhoe, 1894, *Ann. Mag. nat. Hist.* (6)**14** : 442.

Type-species: ***Chalcosiopsis variata*** Swinhoe, 1894, *ibid.* (6)**14** : 442, by monotypy.

‡*CHALEOSIA* Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 142.

An incorrect subsequent spelling of *Chalcosia* Hübner, [1819].

‡*CHARICLEA* Hampson, 1918, *Novit. zool.* **25** : 378.

An incorrect subsequent spelling of *Charidea* Dalman, 1816.

CHARIDEA Dalman, 1816, *K. svenska VetenskAkad. Handl.* **1816** : 225 (objective replacement name for *Glaucopis* Fabricius, 1807, nom. praeocc.).

Type-species: *Zygaena argynnis* Fabricius, 1781, *Species Insect.* **2** : 161 [= *Sphinx hypparchus* Cramer, [1779], *Uitl. Kapellen* **3** : 7, pl. 197, fig. C; [1780], *ibid.* **3** : 175], by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 169.

Kirby (loc. cit.) designates *Sphinx hypparchus* Cramer, [1779], as the type-species with *Zygaena argynnis* Fabricius, 1781, in synonymy; this automatically designates the type-species of *Glaucopis* Fabricius, 1807, which is placed in synonymy, and of *Marmax* Rafinesque, 1815, a replacement name for *Glaucopis* Fabricius.

Charidea Dalman, 1816, is an unnecessary replacement name for *Glaucopis* Fabricius, 1807 and a junior objective synonym of *Marmax* Rafinesque, 1815.

CHARMONA Billberg, 1820, *Enumeratio Insect. Mus. Billberg*: 82.

Type-species: *Sphinx pectinicornis* Linnaeus, 1758, *Syst. Nat.* ed. X, **1** : 495, by PRESENT DESIGNATION.

Charmona Billberg, 1820, is a junior objective synonym of *Chalcosia* Hübner, [1819].

CHELURA Hope, 1841, *Trans. Linn. Soc. Lond.* **18** : 444 (nom. praeocc.).

Type-species: *Chelura bifasciata* Hope, 1841, *ibid.* **18** : 444, by monotypy.

Chelura Hope, 1841, is a junior homonym of *Chelura* Philippi, 1839 (Crustacea); *Achelura* Kirby, 1892, was proposed as the objective replacement name.

CHILIOPROCRIS Jordan, 1913, *in* Seitz, *Gross-Schmett. Erde* **6** : 24.

Type-species: ***Procris melas*** Guérin-Méneville, 1839, *Magasin Zool. Paris* (2)**1** : 2, pl. 11, fig. 3, by original designation and monotypy.

‡*CHRYSAOR* Hübner, [1806], *Tentamen*: 1.

Type-species: *Sphinx statices* Linnaeus, 1758, *Syst. Nat.* ed. X, **1** : 495, by monotypy.

Chrysaor Hübner, [1806], is not available following the rejection of the *Tentamen* in Opinion 97 of the International Commission on Zoological Nomenclature (1926, *Smithson. misc. Collns* **73** : 355–366). For convenience it is placed as a junior subjective synonym of *Adscita* Retzius, 1783.

CHRYSAOR* Hübner, [1809], *Samml. exot. Schmett.* **1, pl. [161] (nom. praeocc.).

Type-species: *Zygaena eryx* Fabricius, 1775, *Syst. Ent.*: 552, by monotypy.

Chrysaor Hübner, [1809], is a junior homonym of *Chrysaor* de Montfort, 1808 (Mollusca), and is replaced by its junior objective synonym *Belemnia* Walker, 1854.

The genus is currently placed in the Arctiidae (Wagner, 1919, *in* Strand, *Lepid. Cat.* **22** : 118).

CHRYSARTONA Swinhoe, 1892, *Cat. east. & Aust. Lepid. Heterocera Colln Oxf. Univ. Mus.* **1** : 57.

Type-species: ***Procris stipata*** Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 114, by original designation and monotypy.

CHRYSOCALEOPSIS van Eecke, 1920, *Zoöl. Meded. Leiden* **5** : 113.

Type-species: ***Lophosoma sarah*** Snellen, 1910, *Tijdschr. Ent.* **53** : 282, pl. 13, fig. 3 [= *Mydrothauma ada* Butler, 1892, *Proc. zool. Soc. Lond.* **1892** : 122], by monotypy.

Chrysocaleopsis van Eecke, 1920, is a junior subjective synonym of *Mydrothauma* Butler, 1892. The type-species *Lophosoma sarah* Snellen, 1910, is currently considered to be conspecific with *Mydrothauma ada* Butler, 1892, the type-species of *Mydrothauma* Butler.

CICINNOCNEMIS Holland, 1893, *Jl N. Y. ent. Soc.* **1** : 181.

Type-species: ***Cicinnocnemis cornuta*** Holland, 1893, *ibid.* **1** : 181 [= *Sphinx plumipes* Drury, 1782, *Ill. exot. Insects* **3** : 3, pl. 2, fig. 3, Index, p. [77]], by original designation and monotypy.

Cicinnocnemis Holland, 1893, is a junior subjective synonym of *Ninia* Walker, 1856, which is a junior homonym of *Ninia* Baird & Girard, 1853 (Reptilia). The type-species *Cicinnocnemis cornuta* Holland, 1893, is currently considered to be conspecific with *Sphinx plumipes* Drury, 1782, the type-species of *Ninia* Walker, 1856. *Cicinnocnemis* Holland, 1893, may be used as the subjective replacement name for *Ninia* Walker, 1856.

Originally described in the Sesiidae [= Aegeriidae]; subsequently transferred to the Zygaenidae : Charideinae (Hampson, 1918, *Novit. zool.* **25** : 378).

See also: *Ninia* Walker, 1856.

CIRSIPHAGA Holik, 1953, *Ent. Z.* **62** : 153.

Type-species: ***Sphinx brizae*** Esper, [1797], *Schmett., Suppl.* **2**(2) : 27, pl. 43, figs 3, 4, by subsequent designation: Tremewan, 1961, *Entomologist's Rec. J. Var.* **73** : 201.

Tremewan (loc. cit.) erroneously attributed the type-species citation to Holik (loc. cit.) as an original designation. The designation of the type-species should be dated from 1961 (Tremewan, loc. cit.).

Proposed as a subgenus of *Zygaena* Fabricius, 1775.

CLELEA Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 465.

Type-species: ***Clelea sapphirina*** Walker, 1854, *ibid.* **2** : 465, by monotypy.

See also: ‡*Clelia* Walker, 1856.

‡*CLELIA* Walker, 1856, *List Specimens lepid. Insects Colln Br. Mus.* **7** : 1668.

An incorrect subsequent spelling of *Clelea* Walker, 1854.

CLEMATOESSA Jordan, 1915, *Novit. zool.* **22** : 297.

Type-species: ***Clematoessa xuthomelas*** Jordan, 1915, *ibid.* **22** : 297, by original designation and monotypy.

***CLEODA* nom. n.** for *Doclea* Walker, 1864 (nom. praeocc.).

Type-species: ***Doclea syntomoides*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **31** : 122, by monotypy of *Doclea* Walker, 1864.

See also: *Doclea* Walker, 1864; ‡*Doclia* Rothschild & Jordan, 1905.

CNEMOLOPHA Felder, 1874, *in* Felder & Rogenhofer, *Reise öst. Fregatte Novara, Zool.* **2**(2), Lepid. 4, pl. 102, fig. 33; Erklärung der Tafeln LXXV bis CVII, p. 3.

Type-species: ***Cnemolopha australis*** Felder, 1874, *ibid.* 4, pl. 102, fig. 33 [= *Euchromia vicaria* Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 207], by monotypy.

See also: ‡*Cosmolopha* Kirby, 1876.

CODANE Moore, 1879, *in* Hewitson & Moore, *Descr. new Indian lepid. Insects Colln Atkinson*: 17.

Type-species: ***Pidorus zenotea*** Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 425 [= *Gynautocera zenotia* Doubleday, 1847, *Ann. Mag. nat. Hist.* (1)**19** : 77, pl. 7, fig. 2], by original designation and monotypy.

COELESTINA Holik, 1953, *Ent. Z.* **63** : 15.

Type-species: ***Zygaena sedi*** Fabricius, 1787, *Mantissa Insect.* **2** : 101, by original designation.

Proposed as a subgenus of *Zygaena* Fabricius, 1775.

COELESTIS Burgeff, 1926, *in* Strand, *Lepid. Cat.* **33** : 29.

Type-species: ***Zygaena cuvieri*** Boisduval, 1828, *Monogr. Zygénides*: 53, pl. 3, fig. 6, by subsequent designation: Tremewan, 1961, *Entomologist's Rec. J. Var.* **73** : 201.

Proposed as a subgenus of *Zygaena* Fabricius, 1775.

COEMENTA Druce, 1885, *Biologia cent.-am.*, Zool., Lepid.-Heterocera **1** : 123.

Type-species: ***Coementa timon*** Druce, 1885, *ibid.* **1** : 123, by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 287.

See also: ‡*Caementa* Hampson, 1907.

COLLESTIS Wallengren, 1861, *K. svenska Fregatten Eugenies Resa* **2**, Zool. 1, Insecta: 361.

Type-species: ***Collestis limbata*** Wallengren, 1861, *ibid.*: 361 [= *Euchromia triadum* Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 257], by monotypy.

Collestis Wallengren, 1861, is a junior subjective synonym of *Xenares* Herrich-Schäffer, 1856. The type-species *Collestis limbata* Wallengren, 1861, is currently considered to be conspecific with *Xenares fortunii* Herrich-Schäffer, 1856, the type-species of *Xenares* Herrich-Schäffer, while both are currently considered to be conspecific with *Euchromia triadum* Walker, 1854.

COLLETRIA* Nolken & Zeller, 1876, *Horae Soc. ent. Ross.* **12 : 76 (nom. praeocc.).

Type-species: *Colletria pyrrhocrocis* Rogenhofer, 1875, *in* Felder & Rogenhofer, *Reise öst. Fregatte Novara, Zool.* **2**(2), Lepid. 4, pl. 139, fig. 7, by monotypy.

Colletria Nolken & Zeller, 1876, is a junior homonym and a junior objective synonym of *Colletria* Rogenhofer, 1875.

****COLLETRIA*** Rogenhofer, 1875, *in* Felder & Rogenhofer, *Reise öst. Fregatte Novara, Zool.* **2**(2), Lepid. 4, pl. 139, fig. 7; Inhalts-Verzeichniss, p. 7.

Type-species: *Colletria pyrrhocrocis* Rogenhofer, 1875, *ibid.* 4, pl. 139, fig. 7, by monotypy.

Originally described in the Zygaenidae; subsequently transferred to the Arctiidae: Lithosiinae (Hampson, 1900, *Cat. Lepid. Phalaenae Br. Mus.* **2** : 377).

See also: *Colletria* Nolken & Zeller, 1876.

CORMA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **31** : 124.

Type-species: ***Corma obscurata*** Walker, 1864, *ibid.* **31** : 124 [= *Chalcosia fragilis* Walker, 1862, *J. Linn. Soc.* (Zool.) **6** : 98], by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 51.

‡*COSMOLOPHA* Kirby, 1876, *Zool. Rec.* (1874) **11** : 400.

An incorrect subsequent spelling of *Cnemolopha* Felder, 1874.

CRYPTOPHYSOPHILUS Hering, 1922, *Arch. Naturgesch.* **88**(A)11 : 10 [key], 79.

Type-species: ***Pidorus bicoloratus*** Semper, 1898, *Schmett. Philippinischen Inseln* **2** : 430, by original designation and monotypy.

CYANIDIA Jordan, 1925, *Novit. zool.* **32** : 234.

Type-species: ***Caprima thaumasta*** Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 41, pl. 8a, by original designation and monotypy.

CYCLOSIA Hübner, [1820], *Verz. bekannt. Schmett.*: 177.

Type-species: ***Phalaena Geometra panthona*** Stoll, [1780], *in* Cramer, *Uitl. Kapellen* **4** : 68, pl. 322, fig. C; [1782], *ibid.* **4** : 251, by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 46.

DENDROCERA Hampson, [1893], *Fauna Br. India, Moths* **1** : 231 (nom. praeocc.).
Type-species: *Dendrocera quadripunctata* Hampson, [1893], *ibid.* **1** : 231, by original designation and monotypy.
Dendrocera Hampson, [1893], is a junior homonym of *Dendrocera* Lamarck, 1817 (Insecta : Coleoptera), and is here replaced by *Cerodendra* nom. n.

DEVANICA Moore, 1884, *Trans. ent. Soc. Lond.* **1884** : 355 (objective replacement name for *Sephisa* Moore, 1882, nom. praeocc.).
Type-species: ***Eterusia cingala*** Moore, 1877, *Ann. Mag. nat. Hist.* (4) **20** : 343 [= *Pap*[*ilio*] *aedea* Clerck, [1763], *Icones Insect. rariorum* (2), pl. [41], fig. [2]], by monotypy of *Sephisa* Moore, 1882.
Devanica Moore, 1884, was cited as a new genus without a description, but with *Sephisa* Moore, 1882, in synonymy.
The type-species *Eterusia cingala* Moore, 1877, is currently considered to be a junior subjective synonym (subspecies) of *Pap*[*ilio*] *aedea* Clerck, [1763]. It should be noted that *Pap*[*ilio*] *aedea* Clerck has been erroneously dated 1759 by various authors, including Bryk (1936, *in* Strand, *Lepid. Cat.* **71** : 206). Although the name was published by Clerck in part 2 of *Icones Insectorum rariorum*, the title page of which is dated 1764, it is evident that the plate was issued before this date as Linnaeus, in 1763 (*Amoenitates Acad.* **6** : 403), refers to many of Clerck's plates which form part 2 of his work. The name *Pap*[*ilio*] *aedea* Clerck should therefore be dated from [1763].
See also *Sephisa* Moore, [xii]. 1882.

DIANEURA Butler, 1888, *Ann. Mag. nat. Hist.* (6)**1** : 49.
Type-species: ***Dianeura goochii*** Butler, 1888, *ibid.* (6)**1** : 49, by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 57.

DIDINA Walker, 1862, *J. Linn. Soc.* (Zool.) **6** : 99.
Type-species: ***Didina thecloides*** Walker, 1862, *ibid.* **6** : 99, by monotypy.

****DIEIDA*** Strand, 1911, *in* Stichel, *Z. wiss. InsektBiol.* **7** : 162.
Type-species: ***Dieida persa*** Strand, 1911, *ibid.* **7** : 163, by original designation and monotypy.
Originally described in the Zygaenidae : Phaudinae; subsequently transferred to the Cossidae (Seitz, 1912, *Gross-Schmett. Erde* **2** : 428).

DILOPHURA Hampson, 1918, *Novit. zool.* **25** : 378 [key], 382.
Type-species: ***Byblisia caudata*** Jordan, 1907, *Entomologist* **40** : 127, by original designation and monotypy.

****DIOSPAGE*** Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 212.
Type-species: ***Sphinx rhebus*** Cramer, [1779], *Uitl. Kapellen* **3** : 72, pl. 234, fig. F, by subsequent designation, Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 169.
Erroneously associated with the Zygaenidae in the past; currently placed in the Arctiidae (Strand, 1919, *in* Wagner, *Lepid. Cat.* **22** : 118).

DOCLEA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **31** : 122 (nom. praeocc.).
Type-species: *Doclea syntomoides* Walker, 1864, *ibid.* **31** : 122, by monotypy.
Doclea Walker, 1864, is a junior homonym of *Doclea* Leach, 1815 (Crustacea), and is here replaced by *Cleoda* nom. n.

DOCLEOMORPHA Hering, 1922, *Arch. Naturgesch.* **88**(A)11 : 10 [key], 22.
Type-species: ***Pintia boholica*** Semper, 1898, *Schmett. Philippinischen Inseln* **2** : 432, pl. 53, fig. 10, by original designation and monotypy.

DOCLEOPSIS Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 16.
Type-species: ***Docleopsis sulaensis*** Jordan, 1907, *ibid.* **10** : 16, by original designation.

‡*DOCLIA* Rothschild & Jordan, 1905, *Novit. zool.* **12** : 477.
An incorrect subsequent spelling of *Doclea* Walker, 1864.

DORATOPTERYX Rogenhofer, 1884, *Sber. zool.-bot. Ges. Wien* **33** : 23.
Type-species: ***Doratopteryx afra*** Rogenhofer, 1884, *ibid.* **33** : 24, by monotypy.

DUBERNARDIA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 257.
Type-species: ***Phacusa djreuma*** Oberthür, 1893, *Étud. d'Ent.* **18** : 21, pl. 2, fig. 31, by original designation and monotypy.

ELCYSMA Butler, 1881, *Trans. ent. Soc. Lond.* **1881** : 4.
Type-species: ***Elcysma translucida*** Butler, 1881, *ibid.* **1881** : 4 [= *Agalope westwoodii* Snellen van Vollenhoven, 1863, *Tijdschr. Ent.* **6** : 136, pl. 9, fig. 3], by monotypy.

‡*EPHEMERIDES* Pagenstecher, 1909, *Geogr. Verbr. Schmett.*: 441.
An incorrect subsequent spelling of *Ephemeroidea* Hampson, [1893].

EPHEMEROIDEA Hampson, [1893], *Fauna Br. India, Moths* **1** : 242.
Type-species: ***Ephemeroidea ariel*** Hampson, [1893], *ibid.* **1** : 242, by original designation.
See also: ‡*Ephemerides* Pagenstecher, 1909; ‡*Ephemeroides* Pagenstecher, 1909.

‡*EPHEMEROIDES* Pagenstecher, 1909, *Geogr. Verbr. Schmett.*: 440.
An incorrect subsequent spelling of *Ephemeroidea* Hampson, [1893].

EPIORNA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 183.
Type-species: ***Neurosymploca procrioides*** Butler, 1893, *Proc. zool. Soc. Lond.* **1893** : 676, by original designation.

EPIZYGAENA Jordan, [1907], *in* Seitz, *Gross-Schmett. Erde* **2** : 31.
Type-species: ***Zygaena afghana*** Moore, 1858, *in* Horsfield & Moore, *Cat. lepid. Insects Mus. nat. Hist. East-India House* **2** : 286, pl. 7a, fig. 1, by subsequent designation: Fletcher, 1925, *Cat. Indian Insects* **9** : 21.

EPIZYGAENELLA Tremewan & Povolný, 1968, *Čas. morav. Mus. Brně* **53** : 163.
Type-species: ***Zygaena caschmirensis*** Kollar, 1844, *in* Hügel, *Kaschmir und das Reich der Siek* **4**(2) : 459, pl. 19, fig. 6, by original designation.
Proposed as a subgenus of *Praezygaena* Alberti, 1954.

EPYRGIS Herrich-Schäffer, 1853, *Samml. aussereur. Schmett.* **1**, pl. 1, figs 5, 6, pl. 2, figs 7–10; 1858, *ibid.* **1** : 57.
Type-species: ***Epyrgis midamia*** Herrich-Schäffer, 1853, *ibid.* **1**, pl. 2, fig. 7 [as *midama* (incorrect original spelling)]; 1858, *ibid.* **1** : 57, by subsequent designation; Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 44.
See also: *Callamesia* Butler, 1885.

ERASMIA Hope, 1841, *Trans. Linn. Soc. Lond.* **18** : 446.
Type-species: ***Erasmia pulchella*** Hope, 1841, *ibid.* **18** : 446, by monotypy.

ERASMIPHLEBOHECTA Strand, 1917, *Arch. Naturgesch.* **82**(A)3 : 145.
Type-species: ***Erasmia picturata*** Wileman, 1910, *Entomologist* **43** : 139, by monotypy.

ETERUSIA Hope, 1841, *Trans. Linn. Soc. Lond.* **18** : 445.
Type-species: ***Eterusia tricolor*** Hope, 1841, *ibid.* **18** : 445, by monotypy.
See also: *Heterusia* Agassiz, 1846; ‡*Heterusia* Doubleday, 1844.

EUCLIMACIA Jordan, 1913, *in* Seitz, *Gross-Schmett. Erde* **6** : 21 (nom. praeocc.).
Type-species: *Gingla tortricalis* Druce, 1885, *Biologia cent.-am.*, Zool., Lepid. Heterocera **1** : 120, pl. 12, fig. 28, by monotypy.
Euclimacia Jordan, 1913, is a junior homonym of *Euclimacia* Enderlein, 1910 (Insecta : Neuroptera), and is here replaced by *Euclimaciopsis* nom. n.

***EUCLIMACIOPSIS* nom. n.** for *Euclimacia* Jordan, 1913 (nom. praeocc.).
Type-species: ***Gingla tortricalis*** Druce, 1885, *Biologia cent.-am.*, Zool., Lepid. Heterocera **1** : 120, pl. 12, fig. 28, by monotypy of *Euclimacia* Jordan, 1913.
See also: *Euclimacia* Jordan, 1913.

EUCORMA Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 30.

Type-species: ***Phalaena obliquaria*** Fabricius, 1787, *Mantissa Insect.* **2** : 194, by subsequent designation: Van Eecke, (31.i.)1925, *Zoöl. Meded. Leiden* **8** : 175.

The designation of *Milionia intercisa* Walker, 1854, by Fletcher (1925, *Cat. Indian Insects* **9** : 56) was published on 8.vii.1925, and is therefore unacceptable.

EUCORMOPSIS Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 22.

Type-species: ***Eucormopsis lampra*** Jordan, 1907, *ibid.* **10** : 22, by monotypy.

EUCTENIA Felder, 1874, *in* Felder & Rogenhofer, *Reise öst. Fregatte Novara, Zool.* **2**(2), Lepid. 4, pl. 82, fig. 21; Erklärung der Tafeln LXXV bis CVII, p. 4 (nom. praeocc.).

Type-species: *Euctenia zygaenoides* Felder, 1874, *ibid.* 4, pl. 82, fig. 21, by monotypy.

Euctenia Felder, 1874, is a junior homonym of *Euctenia* Gerstaecker, 1855 (Insecta : Coleoptera); *Orna* Kirby, 1892, was proposed as the objective replacement name.

EUMORPHIOPAIS Hering, 1922, *Arch. Naturgesch.* **88**(A)11 : 8 [key], 17.

Type-species: ***Eumorphiopais quadriplaga*** Hering, 1922, *ibid.* **88**(A)11 : 17, by original designation and monotypy.

EUPHACUSA Matsumura, 1927, *J. Coll. Agric. Hokkaido imp. Univ.* **19** : 79, 80.

Type-species: ***Euphacusa taikozana*** Matsumura, 1927, *ibid.* **19** : 79, 80, by original designation and monotypy.

See also: ‡*Euphascusa* Matsumura, 1931; ‡*Eusphacusa* Bryk, 1936.

‡*EUPHASCUSA* Matsumura, 1931, *6000 Ill. Insects Japan-Empire*: 988.

An incorrect subsequent spelling of *Euphacusa* Matsumura, 1927.

‡*EUSPHACUSA* Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 307.

An incorrect subsequent spelling of *Euphacusa* Matsumura, 1927.

EUSPHALERA Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 31.

Type-species: ***Eterusia regina*** Rothschild, 1903, *Novit. zool.* **10** : 484, pl. 12, fig. 23, by subsequent designation: Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 196.

EUTYCHIA Hübner, [1819], *Verz. bekannt. Schmett.*: 117.

Type-species: ***Sphinx rhadamanthus*** Esper, [1793], *Schmett., Suppl.* **2**(2) : 13, pl. 40, figs 1, 2, by subsequent designation: Tremewan, 1961, *Entomologist's Rec. J. Var.* **73** : 202.

EUXANTHOPYGE Hering, 1922, *Arch. Naturgesch.* **88**(A)11 : 11 [key], 62.

Type-species: ***Euxanthopyge hexophthalma*** Hering, 1922, *ibid.* **88**(A)11 : 62, by original designation and monotypy.

FELDERIA Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 163 (nom. praeocc.) (objective replacement name for *Acreagris* Felder, 1874, nom. praeocc.).

Type-species: *Acreagris correbioides* Felder, 1874, *in* Felder & Rogenhofer, *Reise öst. Fregatte Novara, Zool.* **2**(2), Lepid. 4, pl. 83, fig. 2, by monotypy of *Acreagris* Felder, 1874.

Felderia Kirby, 1892, is a junior homonym of *Felderia* Walsingham, 1887 (Lepidoptera, Tineidae), and a junior subjective synonym of *Pyromorpha* Herrich-Schäffer, 1854. The type-species *Acreagris correbioides* Felder, 1874, is currently considered to be congeneric with *Pyromorpha dimidiata* Herrich-Schäffer, 1854, the type-species of *Pyromorpha* Herrich-Schäffer, which may be used as the subjective replacement name.

FORMICULUS Grote, (vii) 1866, *Proc. ent. Soc. Philad.* **6** : 184.

Type-species: ***Formiculus pygmaeus*** Grote, 1866, *ibid.* **6** : 185, pl. 5, fig. 4 [= *Setiodes nana* Herrich-Schäffer, 1866, *KorrespBl. zool.-min. Ver. Regensburg* **20** : 106], by monotypy.

Formiculus Grote, 1866, is a junior subjective synonym of *Setiodes* Herrich-Schäffer, 1866. The type-species *Formiculus pygmaeus* Grote, 1866, is currently considered to be conspecific with *Setiodes nana* Herrich-Schäffer, 1866, the type-species of *Setiodes* Herrich-Schäffer.

FUNERALIA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 264.

Type-species: ***Funeralia transiens*** Alberti, 1954, *ibid.* **30** : 264, by original designation and monotypy.

GAEDEA Hering, 1924, *Dt. ent. Z.* **1924** : 272.
Type-species: ***Gaedea separata*** Hering, 1924, *ibid.* **1924** : 273, by original designation and monotypy.

GINGLA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **31** : 128.
Type-species: ***Gingla radialis*** Walker, 1864, *ibid.* **31** : 128, by monotypy.

GLAUCOPIS Fabricius, 1807, *in* Illiger, *Magazin Insektenk.* **6** : 289 (nom. praeocc.).
Type-species: *Zygaena argynnis* Fabricius, 1781, *Species Insect.* **2** : 161 [= *Sphinx hypparchus* Cramer, [1779], *Uitl. Kappellen* **3** : 7, pl. 197, fig. C; [1780], *ibid.* **3** : 175], by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 169.
Glaucopis Fabricius, 1807, is a junior homonym of *Glaucopis* Gmelin, 1788 (Aves); *Marmax* Rafinesque, 1815, was proposed as the objective replacement name.

GOE Hampson, [1893], *Fauna Br. India, Moths* **1** : 242 (as *Goë*).
Type-species: ***Goe diaphana*** Hampson, [1893], *ibid.* **1** : 242, by original designation and monotypy.

GONIOPROCRIS Jordan, 1913, *in* Seitz, *Gross-Schmett. Erde* **6** : 23.
Type-species: ***Gonioprocris xena*** Jordan, 1913, *ibid.* **6** : 23, by original designation.

GREGORITA Povolný & Šmelhaus, 1951, *Věst. čsl. zool. Spol.* **15** : 159, 164.
Type-species: ***Procris hispanica*** Alberti, 1937, *Ent. Z.* **51** : 87, figs A1–A4, by original designation and monotypy.
Described as a subgenus of *Procris* Fabricius, 1807.

‡*GYMNAUTOCERA* Westwood, 1841, *Arcana ent.* **1** : 20.
An incorrect subsequent spelling of *Gynautocera* Guérin-Méneville, 1831.

‡*GYNANTOCERA* Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 339.
An incorrect subsequent spelling of *Gynautocera* Guérin-Méneville, 1831.

‡*GYNATOCERAS* Rambur, [1866], *Cat. syst. Lépid. Andalousie* (2) : 179.
An incorrect subsequent spelling of *Gynautocera* Guérin-Méneville, 1831.

GYNAUTOCERA Guérin-Méneville, 1831, *Magasin Zool. Paris* **1** : 12.
Type-species: ***Gynautocera papilionaria*** Guérin-Méneville, 1831, *ibid.* **1** : 12, by monotypy.
See also: ‡*Gymnautocera* Westwood, 1841; ‡*Gynantocera* Walker, 1854; ‡*Gynatoceras* Rambur, [1866].

HADRIONELLA Jordan, 1925, *Novit. zool.* **32** : 231.
Type-species: ***Caprima spectabilis*** Rothschild, 1899, *in* Rothschild & Jordan, *Novit. zool.* **6** : 434, by original designation.

HAMPSONIA Swinhoe, 1894, *Ann. Mag. nat. Hist.* (6)**14** : 443.
Type-species: ***Hampsonia pulcherrima*** Swinhoe, 1894, *ibid.* (6)**14** : 443, by monotypy.

HARRISINA Packard, 1864, *Proc. Essex Inst., Salem, Mass.* **4** : 31.
Type-species: ***Aglaope americana*** Guérin-Méneville, 1844, *Icon. Règne Anim., Insectes*: 501, pl. 84 bis, fig. 11, by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 114.

HARRISINOPSIS Jordan, 1913, *in* Seitz, *Gross-Schmett. Erde* **6** : 26.
Type-species: ***Harrisinopsis robusta*** Jordan, 1913, *ibid.* **6** : 26, by original designation and monotypy.

HARRISINULA Hering, 1925, *Dt. ent. Z. Iris* **39** : 158.
Type-species: ***Harrisinula infernalis*** Hering, 1925, *ibid.* **39** : 158, by original designation and monotypy.

HEDINA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 249.
Type-species: ***Northia tenuis*** Butler, 1877, *Ann. Mag. nat. Hist.* (4)**20** : 394, by original designation.
Described as a subgenus of *Illiberis* Walker, 1854.

HEMICHRYSOPTERA Roepke, 1943, *Natuurh. Maandbl.* **32** : 69.
Type-species: ***Hemichrysoptera celebensis*** Roepke, 1943, *ibid.* **32** : 69, by monotypy.

HEMISCIA Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 40.
Type-species: ***Herpa meeki*** Rothschild, 1896, *Novit. zool.* **3** : 325, by subsequent designation: Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 229.

HERPA Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 441 (nom. praeocc.).
Type-species: *Herpa venosa* Walker, 1854, *ibid.* **2** : 442, by monotypy.
Herpa Walker, 1854, is a junior homonym of *Herpa* Guilding, 1826 (Mollusca), and is here replaced by *Neoherpa* nom. n.

HERPIDIA Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 229.
Type-species: ***Herpa eupoma*** Swinhoe, 1897, *Ann. Mag. nat. Hist.* (6)**19** : 166, by original designation and monotypy.

HERPOLASIA Rothschild & Jordan, 1905, *Novit. zool.* **12** : 476.
Type-species: ***Herpolasia augarra*** Rothschild & Jordan, 1905, *ibid.* **12** : 476, by original designation.

HESTIOCHORA Meyrick, 1886, *Proc. Linn. Soc. N. S. W.* (2)**1** : 788.
Type-species: ***Procris tricolor*** Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 111, by subsequent designation: Turner, 1926, *Proc. Linn. Soc. N. S. W.* **51** : 441.
See also: ‡*Histiochora* Pagenstecher, 1909.

HESYCHIA Hübner, [1819], *Verz. bekannt. Schmett.*: 116.
Type-species: ***Sphinx laeta*** Hübner, 1790, *Beitr. Geschichte Schmett.* **2** : 88, pl. 2, fig. H, by subsequent designation: Holik & Sheljuzhko, 1953, *Mitt. münch. ent. Ges.* **43** : 219.

HETEROPAN Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 440.
Type-species: ***Heteropan scintillans*** Walker, 1854, *ibid.* **2** : 441, by monotypy.

HETERUSIA Agassiz, 1846, *Nomencl. zool. Index univ.*: 521.
Type-species: *Eterusia tricolor* Hope, 1841, *Trans. Linn. Soc. Lond.* **18** : 445, by monotypy of *Eterusia* Hope, 1841.
An unjustified emendation of *Eterusia* Hope, 1841.
Heterusia Agassiz, 1846, is a junior homonym of *Heterusia* Hübner, [1825] (Lepidoptera, Geometridae).

‡*HETERUSIA* Doubleday, 1844, *Zoologist* **2** : 468.
An incorrect subsequent spelling of *Eterusia* Hope, 1841.

HETERUSINULA Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 231.
Type-species: ***Eterusia dichroa*** Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 33, by original designation and monotypy.

HIMANTOPTERUS Wesmael, 1836, *Bull. Acad. r. Belg.* **3** : 162.
Type-species: ***Himantopterus fuscinervis*** Wesmael, 1836, *ibid.* **3** : 162, by monotypy.

HISTIA Hübner, [1820], *Verz. bekannt. Schmett.*: 198.
Type-species: ***Zygaena flabellicornis*** Fabricius, 1775, *Syst. Ent.*: 831, by monotypy.

‡*HISTIOCHORA* Pagenstecher, 1909, *Geogr. Verbr. Schmett.*: 441.
An incorrect subsequent spelling of *Hestiochora* Meyrick, 1886.

HOMOPHYLOTIS Turner, 1904, *Trans. R. Soc. S. Aust.* **28** : 243.
Type-species: ***Homophylotis thyridota*** Turner, 1904, *ibid.* **28** : 243, by monotypy.

HUEBNERIANA Holik & Sheljuzhko, 1957, *Mitt. münch. ent. Ges.* **47** : 144.
Type-species: ***Sphinx lonicerae*** Scheven, 1777, *Naturforscher, Halle* **10** : 97, by original designation.
Proposed as a subgenus of *Zygaena* Fabricius, 1775.

HYALA Burgeff, 1926, *in* Strand, *Lepid. Cat.* **33** : 15 (nom. praeocc.).
Type-species: *Zygaena loyselis* Oberthür, 1876, *Étud. d'Ent.* **1** : 34, by subsequent designation: Tremewan, 1961, *Entomologist's Rec. J. Var.* **73** : 201.
Hyala Burgeff, 1926, is a junior homonym of *Hyala* Adams, 1852 (Mollusca); *Yasumatsuia* Strand, 1936, was proposed as the objective replacement name.

‡*HYDROTHAUMA* Rothschild & Jordan, 1903, *Novit. zool.* **10** : 483.
An incorrect subsequent spelling of *Mydrothauma* Butler, 1892.

HYSTEROSCENE Hering, 1925, *Dt. ent. Z. Iris* **39** : 176.
Type-species: ***Hysteroscene extravagans*** Hering, 1925, *ibid.* **39** : 177, by original designation and monotypy.

ILLIBERIS Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 280.
Type-species: ***Illiberis sinensis*** Walker, 1854, *ibid.* **2** : 280, by monotypy.
See also: ‡*Jlliberis* Püngeler, 1914.

INO Leach, 1815, *in* Brewster, *Edinb. Encycl.* **9** : 131 (nom. praeocc.).
Type-species: *Sphinx statices* Linnaeus, 1758, *Syst. Nat.* ed. X, **1** : 495, by monotypy.
Ino Leach, 1815, is a junior homonym of *Ino* Schrank, 1803 (Crustacea), and a junior objective synonym of *Procris* Fabricius, 1807, which is currently considered to be a junior subjective synonym of *Adscita* Retzius, 1783. The type-species *Sphinx statices* Linnaeus, 1758, which is also the type-species of *Procris* Fabricius, 1807, is currently considered to be conspecific with *Adscita turcosa* Retzius, 1783, the type-species of *Adscita* Retzius, which may be used as a subjective replacement name for *Ino* Leach.

INOPE Staudinger, 1887, *in* Romanoff, *Mém. Lépid.* **3** : 170.
Type-species: ***Inope heterogyna*** Staudinger, 1887, *ibid.* **3** : 170, by monotypy.

ISBARTA Walker, 1856, *List Specimens lepid. Insects Colln Br. Mus.* **7** : 1672.
Type-species: ***Isbarta glauca*** Walker, 1856, *ibid.* **7** : 1672 [= *Epyrgis pieridoides* Herrich-Schäffer, 1853, *Samml. aussereur. Schmett.* **1**, pl. 1, fig. 5], by monotypy.

ISCHNUSIA Jordan, 1928, *Novit. zool.* **34** : 134.
Type-species: ***Syntomis culiculina*** Mabille, 1878, *Bull. Soc. zool. Fr.* **3** : 85, by monotypy.

ISOCRAMBIA Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 11.
Type-species: ***Doclea melaleuca*** Rothschild & Jordan, 1905, *Novit. zool.* **12** : 477, by subsequent designation: Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 141.

‡*JLLIBERIS* Püngler, 1914, *Dt. ent. Z. Iris* **28** : 53.
An incorrect subsequent spelling of *Illiberis* Walker, 1854.

‡*JNO* Püngeler, 1914, *Dt. ent. Z. Iris* **28** : 52.
An incorrect subsequent spelling of *Ino* Leach, 1815.

JORDANITA Agenjo, 1940, *Eos, Madr.* **13** : 46, 47.
Type-species: ***Sphinx chloros*** Hübner, [1808–1813], *Samml. eur. Schmett.* **2**, pl. 28, figs 128, 129, by subsequent designation: Verity, 1946, *Redia* (2)**31** : 131.
Proposed as a subgenus of *Procris* Fabricius, 1807.

KLABOANA Moore, 1879, *Proc. zool. Soc. Lond.* **1879** : 393.
Type-species: ***Gynautocera macularia*** Guérin-Méneville, 1843, *in* Delessert, *Souvenirs d'un Voyage dans l'Inde* (2) : 83, pl. 25, fig. 2, by monotypy.
Klaboana Moore, 1879, is a junior subjective synonym of *Pintia* Walker, 1854. The type-species *Gynautocera macularia* Guérin-Méneville, 1843, is currently considered to be conspecific with *Pintia metachloros* Walker, 1854, the type-species of *Pintia* Walker.

KUBIA Matsumura, 1927, *J. Coll. Agric. Hokkaido imp. Univ.* **19**(1) : 81.
Type-species: ***Kubia rubricollis*** Matsumura, 1927, *ibid.* **19**(1) : 81, by original designation and monotypy.

KUBLAIA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 255.
Type-species: ***Illiberis heringi*** Draeseke, 1926, *Dt. ent. Z. Iris* **40** : 45, figs, by original designation and monotypy.
Proposed as a subgenus of *Illiberis* Walker, 1854.

****LAEMOCHARIS*** Herrich-Schäffer, 1858, *Samml. aussereur. Schmett.* **1** : 80.
Type-species: ***Laemocharis pertyi*** Herrich-Schäffer, 1854, *ibid.* **1**, pl. 47, fig. 249; 1858, *ibid.* **1** : 80, by subsequent designation: Grote, 1873, *Bull. Buffalo Soc. nat. Sci.* **1** : 32.
Bryk (1936, *in* Strand, *Lepid. Cat.* **71** : 301) erroneously included *Laemocharis* Herrich-Schäffer, 1858, in the Zygaenidae in synonymy under *Stylura* Burmeister, 1878. The genus is currently placed in the Ctenuchidae (= Syntomidae) (Zerny, 1912, *in* Strand, *Lepid. Cat.* **7** : 54).

LAMONTIA Kaye, 1923, *Proc. zool. Soc. Lond.* **1922** : 997 (nom. praeocc.).
Type-species: *Lamontia calibana* Kaye, 1923, *ibid.* **1922** : 997, pl. 1, fig. 18, by monotypy.
Lamontia Kaye, 1923, is a junior homonym of *Lamontia* Kirk, 1895 (Spongida), and is here replaced by *Monalita* nom. n.

LAMPROCHLOE Hampson, 1900, *J. Bombay nat. Hist. Soc.* **13** : 226 (as *Lamprochlöe*).
Type-species: ***Lamprochloe albipuncta*** Hampson, 1900, *ibid.* **13** : 226, by monotypy.
See also: ‡*Lamprochroe* Bryk, 1936.

‡*LAMPROCHROE* Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 113.
An incorrect subsequent spelling of *Lamprochloe* Hampson, 1900.

LAMPROCHRYSA Hampson, 1918, *Novit. zool.* **25** : 378 [key], 379.
Type-species: *Diospage triplex* Plötz, 1880, sensu Hampson, 1918, *ibid.* **25** : 379 [= ***Diospage scintillans*** Butler, 1893, *Proc. zool. Soc. Lond.* **1893** : 675, pl. 60, figs 12, 13], by original designation and monotypy.
When proposing this genus, Hampson (loc. cit.) based his description on the type-specimens of *Diospage scintillans* Butler, which he incorrectly placed in synonymy under *Diospage triplex* Plötz, without examining the type of the latter species. Gaede (1926, *in* Seitz, *Gross-Schmett. Erde* **14** : 26) considered *scintillans* Butler to be a distinct species, retaining it in the genus *Lamprochrysa*, and placed *triplex* Plötz in the genus *Syringura* Holland (Gaede, loc. cit.: 33).

‡*LAURIA* Herrich-Schäffer, 1858, *Samml. aussereur. Schmett.* **1** : 57.
An incorrect subsequent spelling of *Laurion* Walker, 1854.

LAURION Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 426.
Type-species: ***Laurion metallica*** Walker, 1854, *ibid.* **2** : 426 [= *Milleria circe* Herrich-Schäffer, 1853, *Samml. aussereur. Schmett.* **1**, pl. [1], fig. 2], by monotypy.
See also: ‡*Lauria* Herrich-Schäffer, 1858.

LEPTOTHRIX* Heylaerts, 1892, *Annls Soc. ent. Belg.* **36 : 47 (nom. praeocc.).
Type-species: *Leptothrix tettigonioides* Heylaerts, 1892, *ibid.* **36** : 47, by monotypy.
Leptothrix Heylaerts, 1892, is a junior homonym of *Leptothrix* Menge, 1869 (Arachnida), and a junior subjective synonym of *Chionaema* Herrich-Schäffer, 1856.
Originally described in the Zygaenidae; subsequently transferred to the Arctiidae : Lithosiinae by van Eecke (1925, *Zoöl. Meded. Leiden* **8** : 171; 1927, *ibid.* **10** : 102) who placed the type-species in the genus *Chionaema* Herrich-Schäffer, 1856.

LEPTOZYGAENA Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 13.
Type-species: ***Leptozygaena gracilis*** Jordan, 1907, *ibid.* **10** : 13, by monotypy.

LEVUANA Bethune-Baker, 1906, *Ann. Mag. nat. Hist.* (7)**18** : 343.
Type-species: ***Levuana iridescens*** Bethune-Baker, 1906, *ibid.* (7)**18** : 344, by original designation and monotypy.

LIBANIA Holik & Sheljuzhko, 1956, *Mitt. münch. ent. Ges.* **46** : 94 (nom. praeocc.).
Type-species: *Zygaena graslini* Lederer, 1855, *Verh. zool.-bot. Ver. Wien* **5** : 197, pl. 2, figs 3, 4, by original designation and monotypy.
Libania Holik & Sheljuzhko, 1956, was proposed as a subgenus of *Zygaena* Fabricius, 1775, and is a junior homonym of *Libania* Penchinat, 1870 (Mollusca), and a junior subjective synonym of *Mesembrynus* Hübner, [1819]. The type-species *Zygaena graslini* Lederer, 1855, is currently considered to be congeneric with *Zygaena* (*Mesembrynus*) *purpuralis* Brünnich, 1763, the type-species of the subgenus *Mesembrynus* Hübner, which may be used as the subjective replacement name.

LICTORIA Burgeff, 1926, *in* Strand, *Lepid. Cat.* **33** : 20.
Type-species: ***Sphinx achilleae*** Esper, [1781], *Schmett.* **2** : 189, pl. 25, figs 1a, 1b [= *Sphinx loti* [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend*: 45], by subsequent designation: Holik, 1938, *Ent. Rdsch.* **55** : 352.
Proposed as a subgenus of *Zygaena* Fabricius, 1775.

LOPHOSOMA Swinhoe, 1892, *Cat. east. & Aust. Lepid. Heterocera Colln Oxf. Univ. Mus.* **1** : 58.
Type-species: ***Syntomis cuprea*** Walker, 1856, *List Specimens lepid. Insects Colln Br. Mus.* **7** : 1596, by original designation.

LUCASIA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 319 (nom. praeocc.).
Type-species: *Procris cirtana* Lucas, 1849, *Explor. scient. Algérie*, Zool. **2**(3) : 374, pl. 3, fig. 3, by original designation.
Proposed as a subgenus of *Procris* Fabricius, 1807.
Lucasia Alberti, 1954, is a junior homonym of *Lucasia* Robineau-Desvoidy, 1863 (Insecta : Diptera); *Lucasiterna* Alberti, 1961, was proposed as the objective replacement name.

‡*LUCASIDIA* Agenjo, 1968, *Graellsia* **23**, Catálogo ordenador de los lepidópteros de España, Zygaenidae: [5].
An incorrect subsequent spelling of *Lucasia* Alberti, 1954.

LUCASITERNA Alberti, 1961, *Ent. Z.* **71** : 59 (objective replacement name for *Lucasia* Alberti, 1954, nom. praeocc.).
Type-species: ***Procris cirtana*** Lucas, 1849, *Explor. scient. Algérie*, Zool. **2**(3) : 374, pl. 3, fig. 3, by original designation for *Lucasia* Alberti, 1954.
See also: *Lucasia* Alberti, 1954; ‡*Lucasidia* Agenjo, 1968.

LYCASTES Hübner, [1819], *Verz. bekannt. Schmett.*: 118.
Type-species: ***Sphinx exulans*** Hohenwarth, 1792, *in* Reiner & Hohenwarth, *Bot. Reisen* [**1**] : 265, pl. 6, fig. 2, by subsequent designation: Tremewan, 1961, *Entomologist's Rec. J. Var.* **73** : 202.

MALAMBLIA Jordan, 1907, *Entomologist* **40** : 124.
Type-species: ***Malamblia durbanica*** Jordan, 1907, *ibid.* **40** : 125, by monotypy.

MALTHACA Clemens, 1860, *Proc. Acad. nat. Sci. Philad.* **1860** : 540.
Type-species: ***Malthaca perlucidula*** Clemens, 1860, *ibid.* **1860** : 541 [= *Pyromorpha dimidiata* Herrich-Schäffer, 1854, *Samml. aussereur. Schmett.* **1**, pl. [43], fig. 222; 1856, *ibid.* **1** : 6; 1858, *ibid.* **1** : 57], by monotypy.
Malthaca Clemens, 1860, is a junior subjective synonym of *Pyromorpha* Herrich-Schäffer, 1854. The type-species *Malthaca perlucidula* Clemens, 1860, is currently considered to be conspecific with *Pyromorpha dimidiata* Herrich-Schäffer, 1854, the type-species of *Pyromorpha* Herrich-Schäffer.

MARMAX Rafinesque, 1815, *Analyse de la Nature*: 128 (objective replacement name for *Glaucopis* Fabricius, 1807, nom. praeocc.).

Type-species: ***Zygaena argynnis*** Fabricius, 1781, *Species Insect.* **2** : 161 [= *Sphinx hypparchus* Cramer, [1779], *Uitl. Kapellen*, **3** : 7, pl. 197, fig. C; [1780], *ibid.* **3** : 175], by subsequent designation for *Glaucopis* Fabricius, 1807.

See also: ‡*Chariclea* Hampson, 1918; *Charidea* Dalman, 1816; *Glaucopis* Fabricius, 1807; *Pompostola* Hübner, [1819].

****MELISOMIMAS*** Jordan, 1907, *Entomologist* **40** : 127.

Type-species: *Melisa grandis* Holland, 1893, sensu Jordan, 1907, *ibid.* **40** : 127 [= ***Melisomimas metallica*** Hampson, 1914, *Bull. ent. Res.* **5** : 245], by original designation and monotypy.

Originally described in the Zygaenidae; here transferred to the Metarbelidae (Vári, in litt.).

Hampson (loc. cit.) realised that Jordan (loc. cit.) had misidentified *Melisa grandis* Holland, 1893, and redescribed Jordan's specimens as a new species, *Melisomimas metallica* Hampson.

MENELIKIA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 308 (nom. praeocc.).

Type-species: *Menelikia jordani* Alberti, 1954, *ibid.* **30** : 309, by original designation and monotypy.

Menelikia Alberti, 1954, is a junior homonym of *Menelikia* Arambourg, 1941 (Mammalia); *Alteramenelikia* Alberti, 1971, was proposed as the objective replacement name.

MESEMBRYNOIDEA Holik & Sheljuzhko, 1958, *Mitt. münch. ent. Ges.* **48** : 271.

Type-species: ***Zygaena cambysea*** Lederer, 1870, *Horae Soc. ent. Ross.* **6** : 86, pl. 5, fig. 6, by original designation and monotypy.

Proposed as a subgenus of *Zygaena* Fabricius, 1775.

MESEMBRYNUS Hübner, [1819], *Verz. bekannt. Schmett.*: 119.

Type-species: ***Zygaena pluto*** Ochsenheimer, 1808, *Schmett. Eur.* **2** : 26 [= *Sphinx purpuralis* Brünnich, 1763, *in* Pontoppidan, *Danske Atlas* **1** : 686, pl. 30], by subsequent designation: Tremewan, 1961, *Entomologist's Rec. J. Var.* **73** : 202.

See also: *Libania* Holik & Sheljuzhko, 1956.

METANYCLES Butler, 1876, *J. Linn. Soc.* (Zool.) **12** : 425.

Type-species: ***Aclytia contracta*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **31** : 102, by original designation and monotypy.

MILLERIA Herrich-Schäffer, 1853, *Samml. aussereur. Schmett.* **1**, pl. [1], fig. 4; 1858, *ibid.* **1** : 78.

Type-species: ***Milleria virginalis*** Herrich-Schäffer, 1853, *ibid.* **1**, pl. [1], fig. 4; 1858, *ibid.* **1** : 78 [= *Gynautocera adalifa* Doubleday, 1847, *Ann. Mag. nat. Hist.* (1)**19** : 76], by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 43.

Milleria Herrich-Schäffer, 1853, is not a junior homonym of *Milleria* Goldfuss, 1830 (Echinoderma), which is a nomen nudum.

MIMASCAPTESYLE Hering, 1922, *Arch. Naturgesch.* **88**(A)11 : 11 [key], 77.

Type-species: ***Mimascaptesyle zelotypia*** Hering, 1922, *ibid.* **88**(A)11 : 78, by original designation.

MIMEUPLOEA Butler, 1877, *Proc. zool. Soc. Lond.* **1877** : 169.

Type-species: ***Mimeuploea rhadamantha*** Butler, 1877, *ibid.* **1877** : 170 [= *Cyclosia danaides* Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **31** : 114], by original designation and monotypy.

See also: ‡*Mineuploea* Swinhoe, 1892.

‡*MINEUPLOEA* Swinhoe, 1892, *Cat. east. & Aust. Lepid. Heterocera Colln Oxf. Univ. Mus.* **1** : 71

An incorrect subsequent spelling of *Mimeuploea* Butler, 1877.

MONALITA **nom. n.** for *Lamontia* Kaye, 1923 (nom. praeocc.).
Type-species: ***Lamontia calibana*** Kaye, 1923, *Proc. zool. Soc. Lond.* **1922** : 997, pl. 1, fig. 18, by monotypy of *Lamontia* Kaye, 1923.
See also: *Lamontia* Kaye, 1923.

MONOSCHALIS Hampson, [1893], *Fauna Br. India, Moths* **1** : 238.
Type-species: ***Monoschalis virescens*** Hampson, [1893], *ibid.* **1** : 238, by original designation and monotypy.

MORIONIA Jordan, 1910, *Novit. zool.* **17** : 256.
Type-species: ***Morionia sciara*** Jordan, 1910, *ibid.* **17** : 256, by monotypy.

MYDROTHAUMA Butler, 1892, *Proc. zool. Soc. Lond.* **1892** : 121.
Type-species: ***Mydrothauma ada*** Butler, 1892, *ibid.* **1892** : 122, by original designation and monotypy.
See also: *Chrysocaleopsis* van Eecke, 1920; ‡*Hydrothauma* Rothschild & Jordan, 1903.

NAUFOCKIA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 317.
Type-species: ***Procris brandti*** Alberti, 1938, *Ent. Rdsch.* **55** : 398, figs 1A–1D, by monotypy.
Proposed as a subgenus of *Rhagades* Wallengren, 1863.

NEOBALATAEA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 306.
Type-species: ***Neobalataea nigriventris*** Alberti, 1954, *ibid.* **30** : 307, by original designation.

NEOHERPA **nom. n.** for *Herpa* Walker, 1854 (nom. praeocc.).
Type-species: ***Herpa venosa*** Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 442, by monotypy of *Herpa* Walker, 1854.
See also: *Herpa* Walker, 1854.

NEOPROCRIS Jordan, 1915, *Novit. zool.* **22** : 300.
Type-species: ***Neoprocris saltuaria*** Jordan, 1915, *ibid.* **22** : 300, by original designation and monotypy.
See also: ‡*Neoproctis* Bryk, 1936.

NEOPROCRIS Turner, 1926, *Proc. Linn. Soc. N. S. W.* **51** : 445 (nom. praeocc.).
Type-species: *Procris dolens* Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 112, by original designation and monotypy.
Neoprocris Turner, 1926, is a junior homonym of *Neoprocris* Jordan, 1915 (Lepidoptera, Zygaenidae); *Turneriprocris* Bryk, 1936, was proposed as the objective replacement name.

‡*NEOPROCTIS* Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 302, 308.
An incorrect subsequent spelling of *Neoprocris* Jordan, 1915.

NEOPRYERIA Matsumura, 1927, *J. Coll. Agric. Hokkaido imp. Univ.* **19**(1) : 75, 76.
Type-species: ***Neopryeria jezoensis*** Matsumura, 1927, *ibid.* **19**(1) : 75, by original designation and monotypy.

‡*NEOSYMPLOCA* Barrett, 1901, *Entomologist's mon. Mag.* **37** : 193.
An incorrect subsequent spelling of *Neurosymploca* Wallengren, 1858.

NESACE Kirby, 1892, *Synonymic Cat. Lepid. Heterocera,* **1** : 112 (objective replacement name for *Pampa* Walker, 1854).
Type-species: *Euchromia mystica* Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 238, by subsequent designation for *Pampa* Walker, 1854.
Nesace Kirby, 1892, is an unnecessary replacement name for *Pampa* Walker, 1854.

NETROCERA Felder, 1874, *in* Felder & Rogenhofer, *Reise öst. Fregatte Novara, Zool.* **2**(2), Lepid. 4, pl. 83, fig. 5; Erklärung der Tafeln LXXV bis CVII, p. 7.
Type-species: ***Netrocera setioides*** Felder, 1874, *ibid.* 4, pl. 83, fig. 5, by monotypy.
See also: *Netrocera* Jordan, 1907.

NETROCERA Jordan, 1907, *Entomologist* **40** : 126.
Type-species: *Netrocera setioides* Felder, 1874, *in* Felder & Rogenhofer, *Reise öst. Fregatte Novara, Zool.* **2**(2), Lepid. 4, pl. 83, fig. 5, by PRESENT DESIGNATION.
Jordan considered *Netrocera* Felder, 1874, to be a nomen nudum and described it as a new genus. However, as *Netrocera* Felder, 1874, is a valid name, *Netrocera* Jordan, 1907, is a junior homonym and a junior objective synonym of the former.

NEUROSYMPLOCA Wallengren, 1858, *Öfvers. K. VetenskAkad. Förh. Stockh.* **15** : 136.
Type-species: *Zygaena concinna* Dalman, 1823, sensu Wallengren, 1858, *ibid.* **15** : 136 [= ***Neurosymploca wallengreni*** Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 80], by original designation and monotypy.
See also: ‡*Neosymploca* Barrett, 1901.

NINIA Walker, 1856, *List Specimens lepid. Insects Colln Br. Mus.* **8** : 72 (nom. praeocc.).
Type-species: *Sphinx plumipes* Drury, 1782, *Ill. exot. Insects* **3** : 3, pl. 2, fig. 3; Index, p. [77] [= *Cicinnocnemis cornuta* Holland, 1893, *Jl N. Y. ent. Soc.* **1** : 181], by monotypy.
The type-species, *Sphinx plumipes* Drury, 1782, is a junior, primary homonym of *Sphinx plumipes* Drury, 1773, (Lepidoptera, Ctenuchidae (= Syntomidae)); it may be replaced by *Cicinnocnemis cornuta* Holland, 1893, which is currently considered to be a junior, subjective synonym.
Ninia Walker, 1856, is a junior homonym of *Ninia* Baird & Girard, 1853 (Reptilia), and may be replaced by its junior subjective synonym *Cicinnocnemis* Holland, 1893.

NORTHIA Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 141 (nom. praeocc.).
Type-species: *Glaucopis nigrigemma* Walker, 1854, *ibid.* **1** : 141, by monotypy.
Walker (loc. cit.) included two nominal species in the genus *Northia* Walker, 1854, viz., *nigrigemma* Walker and *auxo* Linnaeus; however, the latter was doubtfully included, consequently *nigrigemma* is the type-species by monotypy.
Northia Walker, 1854, is a junior homonym of *Northia* Gray, 1847 (Mollusca); it may be replaced by its junior subjective synonym *Zama* Herrich-Schäffer, 1856. The type-species *Glaucopis nigrigemma* Walker, 1854, is currently considered to be conspecific with *Zama cyanecula* Herrich-Schäffer, 1856, the type-species of *Zama* Herrich-Schäffer.

NOTIOPTERA Butler, 1876, *J. Linn. Soc.* (Zool.) **12** : 355, pl. 28, fig. 2.
Type-species: ***Syntomis dolosa*** Walker, 1856, *List Specimens lepid. Insects Colln Br. Mus.* **7** : 1594, by original designation.

ONCEROPYGA Turner, 1906, *Trans. R. Soc. S. Aust.* **30** : 137.
Type-species: ***Onceropyga anelia*** Turner, *ibid.* **30** : 137, by monotypy.

OPISOPLATIA Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 30.
Type-species: ***Opisoplatia grandis*** Jordan, 1907, *ibid.* **10** : 31, by monotypy.

ORNA Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 81 (objective replacement name for *Euctenia* Felder, 1874, nom. praeocc.).
Type-species: ***Euctenia zygaenoides*** Felder, 1874, *in* Felder & Rogenhofer, *Reise öst. Fregatte Novara, Zool.* **2**(2) Lepid. 4, pl. 82, fig. 21; Erklärung der Tafeln LXXV bis CVII, p. 4, by monotypy for *Euctenia* Felder, 1874.
See also: *Euctenia* Felder, 1874.

‡†*PALAEOZYGAENA* Reiss, 1936, *Ent. Rdsch.* **53** : 556 (nomen nudum).
Although associated with *Zygaena miocaenica* Reiss, 1936, the name can only be treated as a nomen nudum and is therefore unavailable. Reiss (loc. cit.) stated that he would not wish to erect a new genus such as *Palaeozygaena* for the species.

PAMPA Walker, [11.ii.] 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 238.

Type-species: ***Euchromia mystica*** Walker, 1854, *ibid.* **1** : 239, by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 112.

Kirby (loc. cit.) replaced the name *Pampa* Walker, 1854, by *Nesace* Kirby, 1892, as the former was erroneously considered to be a junior homonym of *Pampa* Reichenbach, 1854 (Aves). Neave (1940, *Nomencl. zool.* **3** : 543) considered *Pampa* Walker, 1854 to be a senior homonym and therefore available. The exact date of publication of *Pampa* Reichenbach is unknown, but it is known by external evidence that *Pampa* Walker was published on 11.ii. 1854; the latter should therefore take priority.

See also: *Nesace* Kirby, 1892.

PANHERPINA Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 192.

Type-species: ***Herpa basiflava*** Oberthür, 1891, *Étud. d'Ent.* **15** : 21, pl. 3, fig. 25, by original designation and monotypy.

PARAPHLEBIA Felder, 1874, *in* Felder & Rogenhofer, *Reise öst. Fregatte Novara, Zool.* **2**(2), Lepid. 4, pl. 83, fig. 6; Erklärung der Tafeln LXXV bis CVIII, p. 7 (nom. praeocc.).

Type-species: *Paraphlebia lithosina* Felder, 1874, *ibid.* 4, pl. 83, fig. 6, by monotypy.

Paraphlebia Felder, 1874, is a junior homonym of *Paraphlebia* Selys, 1861 (Insecta : Odonata), and may be replaced by its junior subjective synonym *Phlebohecta* Hampson, [1893]. The type-species *Paraphlebia lithosina* Felder, 1874, is currently considered to be congeneric with *Soritia fuscescens* Moore, 1879, which is the type-species of *Phlebohecta* Hampson.

PARASYNTOMIS Distant, 1897, *Ann. Mag. nat. Hist.* (6)**20** : 15, 16.

Type-species: ***Parasyntomis aethiops*** Distant, 1897, *ibid.* (6)**20** : 15, 16, by monotypy.

Placed in the Zygaenidae by Janse (1917, *Check-list S. Afr. Lepid. Heterocera*: 140).

PEDOPTILA Butler, 1885, *Ann. Mag. nat. Hist.* (5)**15** : 341.

Type-species: ***Pedoptila nemopteridia*** Butler, 1885, *ibid.* (5)**15** : 341, by monotypy.

See also: ‡*Petoptila* Bethune-Baker, 1911.

PERISTYGIA Burgeff, 1926, *in* Strand, *Lepid. Cat.* **33** : 25.

Type-species: ***Zygaena anthyllidis*** Boisduval, 1828, *Monogr. Zygénides*: 78, pl. 4, fig. 8, by subsequent designation: Tremewan, 1961, *Entomologist's Rec. J. Var.* **73** : 202.

Proposed as a subgenus of *Zygaena* Fabricius, 1775.

PERROTIA* Oberthür, 1922, *Étud. Lépid. comp.* **19(1) : 153 (nom. praeocc.).

Type-species: *Perrotia tamatavana* Oberthür, 1922, *ibid.* **19**(1) : 153, by monotypy.

Perrotia Oberthür, 1922, is a junior homonym of *Perrotia* Oberthür, 1916 (Lepidoptera, Hesperiidae); *Boisduvalodes* Viette, 1955, was proposed as the objective replacement name. Originally described in the Megalopygidae; subsequently transferred to the Zygaenidae : Phaudinae (Jordan, 1928, *Novit. zool.* **34** : 132), and Zygaenidae : Anomoeotinae (Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 201). Here transferred to the Somabrachyidae (Tams, in litt.).

‡*PETOPTILA* Bethune-Baker, 1911, *Ann. Mag. nat. Hist.* (8)**7** : 573.

An incorrect subsequent spelling of *Pedoptila* Butler, 1885.

‡*PEUCEDAMOPHILA* Neave, 1940, *Nomencl. zool.* **3** : 682.

An incorrect subsequent spelling of *Peucedanophila* Burgeff, 1926.

PEUCEDANOPHILA Burgeff, 1926, *in* Strand, *Lepid. Cat.* **33** : 19.

Type-species: ***Sphinx cynarae*** Esper, [1789], *Schmett.*, *Suppl.* **2**(2) : 2, pl. 37, figs 2–4, by monotypy.

Proposed as a subgenus of *Zygaena* Fabricius, 1775.

See also: ‡*Peucedamophila* Neave, 1940.

PHACUSA Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 150.

Type-species: ***Glaucopis tenebrosa*** Walker, 1854, *ibid.* **1** : 150, by monotypy.

‡*PHANDA* Mell, 1922, *Dt. ent. Z.* **1922** : 126.
An incorrect subsequent spelling of *Phauda* Walker, 1854.

PHAUDA Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 256.
Type-species: ***Euchromia flammans*** Walker, 1854, *ibid.* **1** : 257, by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 111.
See also: ‡*Phanda* Mell, 1922.

PHAUDOPSIS Hampson, 1900, *J. Bombay nat. Hist. Soc.* **13** : 226.
Type-species: ***Phaudopsis igneola*** Hampson, 1900, *ibid.* **13** : 226, by monotypy.

‡*PHILIPATOR* Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 185, 308.
An incorrect subsequent spelling of *Philopator* Moore, 1865.

PHILOPATOR Moore, 1865, *Proc. zool. Soc. Lond.* **1865** : 800.
Type-species: ***Philopator basimaculata*** Moore, 1865, *ibid.* **1865** : 800, by monotypy.
See also: ‡*Philipator* Bryk, 1936.

‡*PHIMARA* Pagenstecher, 1909, *Geogr. Verbr. Schmett.*: 440.
An incorrect subsequent spelling of *Thymara* Doubleday, 1843.

PHLEBOHECTA Hampson, [1893], *Fauna Br. India, Moths* **1** : 251.
Type-species: ***Soritia fuscescens*** Moore, 1879, *in* Hewitson & Moore, *Descr. new Indian lepid. Insects Colln Atkinson*: 16, by original designation.
See also: *Paraphlebia* Felder, 1874.

PIAROSOMA Hampson, [1893], *Fauna Br. India, Moths* **1** : 243.
Type-species: ***Piarosoma albicinctum*** Hampson, [1893], *ibid.* **1** : 243, by original designation and monotypy.

‡*PIDERUS* Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **31** : 117.
An incorrect subsequent spelling of *Pidorus* Walker, 1854.

‡*PIDORA* Walker, 1856, *List Specimens lepid. Insects Colln Br. Mus.* **7** : 1670.
An incorrect subsequent spelling of *Pidorus* Walker, 1854.

PIDORUS Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 424.
Type-species: ***Phalaena Bombyx glaucopis*** Drury, 1773, *Ill. exot. Insects* **2** : 11, pl. 6, fig. 4, Index, p. [91], by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 51.
See also: ‡*Piderus* Walker, 1864; ‡*Pidora* Walker, 1856.

PINTIA Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 280.
Type-species: ***Pintia metachloros*** Walker, 1854, *ibid.* **2** : 281 [= *Gynautocera macularia* Guérin-Méneville, 1843, *in* Delessert, *Souvenirs d'un Voyage dans l'Inde* (2) : 83, pl. 25, fig. 2], by monotypy.
See also: *Klaboana* Moore, 1879.

PLATYZYGAENA Swinhoe, 1892, *Cat. east. & Aust. Lepid. Heterocera Colln Oxf. Univ. Mus.* **1** : 57.
Type-species: ***Soritia moelleri*** Elwes, 1890, *Proc. zool. Soc. Lond.* **1890** : 385, pl. 32, fig. 13, by original designation and monotypy.

PLETHONEURA Bryk, 1913, *Int. ent. Z.* **7** : 85.
Type-species: ***Dianeura jacksoni*** Butler, 1888, *Ann. Mag. nat. Hist.* (6)**1** : 50, figs 2, 3, by monotypy.

POLLANISTA Strand, 1915, *Arch. Naturgesch.* **80**(A)10 : 118.
Type-species: ***Pollanista inconspicua*** Strand, 1915, *ibid.* **80**(A)10 : 118, by original designation and monotypy.

POLLANISUS Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 114.
Type-species: ***Procris viridipulverulenta*** Guérin-Méneville, 1839, *Magasin Zool. Paris* (2)**1** : 2, pl. 11, fig. 4, by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 87.

POLYMORPHA Burgeff, 1926, *in* Strand, *Lepid. Cat.* **33** : 65 (nom. praeocc.).
Type-species: *Sphinx transalpina* Esper, [1781], *Schmett.* **2** : 142, by subsequent designation: Tremewan, 1961, *Entomologist's Rec. J. Var.* **73** : 202.
Proposed as a subgenus of *Zygaena* Fabricius, 1775, *Polymorpha* Burgeff, 1926, is a junior homonym of *Polymorpha* Soldani, 1791 (Protozoa); *Biezankoia* Strand, 1936, was proposed as the objective replacement name.

POMPELON Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 413.
Type-species: ***Gynautocera marginata*** Guérin-Méneville, 1843, *in* Delessert, *Souvenirs d'un Voyage dans l'Inde* (2) : 83, pl. 25, fig. 1, by monotypy.

POMPOSTOLA Hübner, [1819], *Verz. bekannt. Schmett.*: 120.
Type-species: ***Sphinx hypparchus*** Cramer, [1779], *Uitl. Kapellen* **3** : 7, pl. 197, fig. C; [1780], *ibid.* **3** : 175, by subsequent designation: Butler, 1876, *J. Linn. Soc.* (Zool.) **12** : 421.
Pompostola Hübner, [1819], is a junior subjective synonym of *Marmax* Rafinesque, 1815. The type-species *Sphinx hypparchus* Cramer, 1779, is currently considered to be conspecific with *Zygaena argynnis* Fabricius, 1781, the type-species of *Marmax* Rafinesque.

PRAEPROCRIS Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 315.
Type-species: ***Rhagades (Praeprocris) pseudomaerens*** Alberti, 1954, *ibid.* **30** : 315, by original designation and monotypy.
Proposed as a subgenus of *Rhagades* Wallengren, 1863.

PRAEZYGAENA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 185.
Type-species: ***Zygaena myodes*** Druce, 1899, *Ann. Mag. nat. Hist.* (7)**3** : 232, by original designation.
Proposed as a subgenus of *Epizygaena* Jordan, [1907].

PRAVIELA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 329.
Type-species: ***Procris anatolica*** Naufock, 1929, *Mitt. münch. ent. Ges.* **19** : 94, figs 1, 2, by original designation.
Proposed as a subgenus of *Procris* Fabricius, 1807.

PRIMILLIBERIS Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 230.
Type-species: ***Illiberis laeva*** Püngeler, 1914, *Dt. ent. Z. Iris* **28** : 53, pl. 3, fig. 13, by original designation.
Proposed as a subgenus of *Illiberis* Walker, 1854.

PROCOTES Butler, 1876, *J. Linn. Soc.* (Zool.) **12** : 355.
Type-species: ***Euchromia diminuta*** Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 230, by original designation and monotypy.

PROCRIS Fabricius, 1807, *in* Illiger, *Magazin Insektenk.* **6** : 289.
Type-species: ***Sphinx statices*** Linnaeus, 1758, *Syst. Nat.* ed. X, **1** : 495, by subsequent designation: Latreille, 1810, *Considérations générales*: 441.
Procris Fabricius, 1807, is a junior subjective synonym of *Adscita* Retzius, 1783. The type-species *Sphinx statices* Linnaeus, 1758, is currently considered to be conspecific with *Adscita turcosa* Retzius, 1783, the type-species of *Adscita* Retzius.

‡*PROERIS* Pagenstecher, 1909, *Geogr. Verbr. Schmett.*: 441.
An incorrect subsequent spelling of *Procris* Fabricius, 1807.

PROSOPANDROPHILA Hering, 1922, *Arch. Naturgesch.* **88**(A)11 : 11 [key], 60.
Type-species: *Gynautocera distincta* Guérin-Méneville, 1843, *in* Delessert, *Souvenirs d'un Voyage dans l'Inde* (2) : 85, pl. 24, fig. 3, by original designation.

PRYERIA Moore, 1877, *Ann. Mag. nat. Hist.* (4)**20** : 85.
Type-species: ***Pryeria sinica*** Moore, 1877, *ibid.* (4)**20** : 86, by monotypy.
See also: ‡*Sinica* Rebel, 1915.

PSAPHIS Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 433.
Type-species: ***Psaphis camadeva*** Walker, 1854, *ibid.* **2** : 434 [= *Gynautocera camadeva* Doubleday, 1847, *Ann. Mag. nat. Hist.* (1)**19** : 75], by monotypy.

PSEUDEUCHROMIA Schultze, 1907, *Philipp. J. Sci.* (A)**2** : 363.
Type-species: ***Pseudeuchromia catachroma*** Schultze, 1907, *ibid.* (A)**2** : 363, by monotypy.
Originally described in the Zygaenidae; here transferred to the Geometridae (Fletcher, in litt.).

‡*PSEUDOCAPTESYLE* Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 231, 309.
An incorrect subsequent spelling of *Pseudoscaptesyle* Hering, 1922.

PSEUDONYCTEMERA Piepers & Snellen, 1903, *Tijdschr. Ent.* **45** : 210.
Type-species: ***Leptosoma marginale*** Snellen van Vollenhoven, 1863, *Tijdschr. Dierk.* no. 10 : 43, by subsequent designation: van Eecke, (31.i.) 1925, *Zoöl. Meded. Leiden*, **8** : 181.

PSEUDOPROCRIS Druce, 1884, *Biologia cent.-am.*, Zool., Lepid.-Heterocera, **1** : 38.
Type-species: ***Pseudoprocris gracilis*** Druce, 1884, *ibid.* **1** : 38, by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 86.

PSEUDOPSYCHE Oberthür, 1879, *Diagnoses d'Espèces nouv. Lépid. de l'île Askold*: 7.
Type-species: ***Pseudopsyche dembowskii*** Oberthür, 1879, *ibid.*: 7, by monotypy.
Originally described in the Pseudopsychidae; subsequently transferred to the Limacodidae [= Cochlidiidae] (Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 344, 345).

PSEUDOSCAPTESYLE Hering, 1922, *Arch. Naturgesch.* **88**(A)11 : 11 [key], 76.
Type-species: ***Eterusia circumdata*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **31** : 121, by original designation.
See also: ‡*Pseudocaptesyle* Bryk, 1936.

PSEUDOSESIDIA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 271.
Type-species: ***Balataea (Pseudosesidia) aegeriaeformis*** Alberti, 1954, *ibid.* **30** : 271, by monotypy.
Proposed as a subgenus of *Balataea* Walker, 1864.

PSEUDOTHYMARA Rebel, 1906, *Verh. zool.-bot. Ges. Wien* **56** : 380, 381 [key].
Type-species: ***Pedoptila staudingeri*** Rogenhofer, 1888, *Sber. zool.-bot. Ges. Wien* **38** : 61, by monotypy.

PSYCHARIUM Herrich-Schäffer, 1855, *Samml. aussereur. Schmett.* **1**, pl. [80], fig. 461; 1858, *ibid.* **1** : 76.
Type-species: ***Psycharium pellucens*** Herrich-Schäffer, 1855, *ibid.* **1**, pl. [80], fig. 461, by monotypy.
Placed in the Zygaenidae : Phaudinae by Jordan (1928, *Novit. zool.* **34** : 136) and in the Zygaenidae : Anomoeotinae by Alberti (1954, *Mitt. zool. Mus. Berl.* **30** : 201). Here transferred to the Somabrachyidae (Tams, in litt.).

PTEROCEROPSIS Swinhoe, 1904, *Trans. ent. Soc. Lond.* **1904** : 154.
Type-species: ***Pteroceropsis unipuncta*** Swinhoe, 1904, *ibid.* **1904** : 154, by monotypy.

PYCNOCTENA Felder, 1874, *in* Felder & Rogenhofer, *Reise öst. Fregatte Novara, Zool.* **2**(2), Lepid. 4, pl. 83, fig. 3; Erklärung der Tafeln LXXV bis CVII, p. 8.
Type-species: ***Pycnoctena angustula*** Felder, 1874, *ibid.* 4, pl. 83, fig. 3, by monotypy.
See also ‡*Pyctonoctena* Bryk, 1936.

‡*PYCTONOCTENA* Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 309.
An incorrect subsequent spelling of *Pycnoctena* Felder, 1874.

PYROMORPHA Herrich-Schäffer, 1854, *Samml. aussereur. Schmett.* **1**, pl. [43], fig. 222; 1856, *ibid.* **1** : 6; 1858, *ibid.* **1** : 57.
Type-species: ***Pyromorpha dimidiata*** Herrich-Schäffer, 1854, *ibid.* **1**, pl. [43], fig. 222, by monotypy.
See also: *Acreagris* Felder, 1874; *Felderia* Kirby, 1892; *Malthaca* Clemens, 1860.

***RATARDA** Moore, 1879, *Proc. zool. Soc. Lond.* **1879** : 392.
Type-species: ***Ratarda marmorata*** Moore, 1879, *ibid.* **1879** : 393, pl. 32, fig. 1, by monotypy.
Originally described in the Zygaenidae : Chalcosiinae; subsequently transferred to the Ratardidae (Dudgeon, Elwes & Hampson, 1901, *J. Bombay nat. Hist. Soc.* **13** : 425).

REISSITA Tremewan, 1959, *Entomologist* **92** : 213.
Type-species: ***Zygaena simonyi*** Rebel, 1899, *Anz. Akad. Wiss. Wien* **36** : 360, by original designation.

RETINA Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 438.
Type-species: ***Retina rubrivitta*** Walker, 1854, *ibid.* **2** : 439, by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 57.

RHAGADES Wallengren, 1863, *Skand. Heterocer-fjärilar* **1** : 110.
Type-species: ***Sphinx pruni*** [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend*: 308, by monotypy.

RHAPHIDOGNATHA Felder & Felder, 1862, *Wien. ent. Monatschr.* **6** : 31 (nom. praeocc.).
Type-species: *Rhaphidognatha sesiaeformis* Felder & Felder, 1862, *ibid.* **6** : 32 [= *Euchromia octomaculata* Bremer, 1861, *Bull. scient. Acad. Sci. St. Petersb.* **3** : 476], by monotypy.
Rhaphidognatha Felder & Felder, 1862, is a junior homonym of *Rhaphidognatha* Murray, 1857 (Insecta : Coleoptera), and a senior subjective synonym of *Balataea* Walker, 1864, which may be used as the subjective replacement name. The type-species *Rhaphidognatha sesiaeformis* Felder & Felder, 1862, is currently considered to be conspecific with *Balataea aegerioides* Walker, 1864, the type-species of *Balataea* Walker; both are currently considered to be conspecific with *Euchromia octomaculata* Bremer, 1861.

RHODOPSONA Jordan, [1907], *in* Seitz, *Gross-Schmett. Erde* **2** : 10.
Type-species: ***Retina costata*** Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 439, by original designation.

ROCCIA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 326.
Type-species: ***Ino budensis*** Speyer & Speyer, 1858, *Geogr. Verbr. Schmett.* **1** : 466, by original designation.
Proposed as a subgenus of *Procris* Fabricius, 1807.

SALIUNCA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **31** : 108.
Type-species: ***Saliunca thoracica*** Walker, 1864, *ibid.* **31** : 108 [= *Tipulodes thoracica* Walker, 1856, *ibid.* **7** : 1626], by original designation.

SALIUNCELLA Jordan, [1907], *Entomologist* **40** : 124.
Type-species: ***Saliuncella marshalli*** Jordan, 1907, *ibid.* **40** : 124, by monotypy.

‡*SANTOLINIPHAGA* Holik & Sheljuzhko, 1955, *Mitt. münch. ent. Ges.* **44/45** : 95; 1958, *ibid.* **48** : 283.
An incorrect subsequent spelling of *Santolinophaga* Burgeff, 1926.

SANTOLINOPHAGA Burgeff, 1926, *in* Strand, *Lepid. Cat.* **33** : 18.
Type-species: ***Zygaena corsica*** Boisduval, 1828, *Monogr. Zygénides*: 81, pl. 5, fig. 2, by monotypy.
Proposed as a subgenus of *Zygaena* Fabricius, 1775. Not recorded by Neave (1939–66, *Nomencl. zool.* **1–6**).
See also: ‡*Santoliniphaga* Holik & Sheljuzhko, 1955.

SCIODOCLEA Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 17.
Type-species: ***Sciodoclea modesta*** Jordan, 1907, *ibid.* **10** : 17, by monotypy.

SCOTOPAIS Hering, 1922, *Arch. Naturgesch.* **88**(A)11 : 5 [key], 75.
Type-species: ***Phlebohecta tristis*** Mell, 1922, *Dt. ent. Z.* **1922** : 127, by original designation and monotypy.

SEMIOPTILA Butler, 1887, *Ann. Mag. nat. Hist.* (5)**20** : 180.
Type-species: ***Semioptila torta*** Butler, 1887, *ibid.* (5)**20** : 181, by monotypy.

SEPHISA Moore, [xii.] 1882, *Lepid. Ceylon* **2** : 41 (nom. praeocc.).
Type-species: *Eterusia cingala* Moore, 1877, *Ann. Mag. nat. Hist.* (4)**20** : 343 [= *Pap*[*ilio*] *aedea* Clerck, [1763], *Icones Insect. rariorum* (2), pl. [41], fig. [2]], by monotypy.
Sephisa Moore, [xii.] 1882, is a junior homonym of *Sephisa* Moore, (vi.) 1882 (Lepidoptera, Nymphalidae); *Devanica* Moore, 1884, was proposed as the objective replacement name.
The type-species *Eterusia cingala* Moore, 1877, is currently considered to be a junior subjective synonym (subspecies) of *Pap*[*ilio*] *aedea* Clerck, [1763]. It should be noted that *Pap*[*ilio*] *aedea* Clerck has been erroneously dated 1759 by various authors, including Bryk (1936, *in* Strand, *Lepid. Cat.* **71** : 206). Although the name was published by Clerck in part 2 of *Icones Insectorum rariorum*, the title page of which is dated 1764, it is evident that the plate was issued before this date as Linnaeus (1763, *Amoenitates Acad.* **6** : 403), refers to many of Clerck's plates which form part 2 of his work. The name *Pap*[*ilio*] *aedea* Clerck should therefore be dated from [1763].

SERYDA Walker, 1856, *List Specimens lepid. Insects Colln Br. Mus.* **7** : 1598.
Type-species: ***Seryda cincta*** Walker, 1856, *ibid.* **7** : 1598, by monotypy.

SETIODES Herrich-Schäffer, (?vii) 1866, *KorrespBl. zool.-min. Ver. Regensburg* **20** : 106.
Type-species: ***Setiodes nana*** Herrich-Schäffer, 1866, *ibid.* **20** : 106, by monotypy.
See also: *Formiculus* Grote, 1866.

SILVICOLA Burgeff, 1926, *in* Strand, *Lepid. Cat.* **33** : 10.
Type-species: ***Zygaena chaos*** Burgeff, 1926, *Mitt. münch. ent. Ges.* **16** : 15 [= *Anthrocera mana* Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 64], by subsequent designation: Tremewan, 1961, *Entomologist's Rec. J. Var.* **73** : 203.
Proposed as a subgenus of *Zygaena* Fabricius, 1775. Not recorded by Neave (1939–66, *Nomencl. zool.* **1–6**).

‡*SINICA* Rebel, 1915, *Verh. zool.-bot. Ges. Wien* **65** : (205) (nomen nudum).
‡*Sinica* Rebel, 1915, was treated by Neave (1940, *Nomencl. Zool.* **4** : 200) as an available name. However, it was published without a description or associated species, and is currently placed in synonymy under *Pryeria* Moore, 1877. The name probably originated in error for *Pryeria* Moore, 1877, of which *Pryeria sinica* Moore, 1877, is the type-species.

SORITIA Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **2** : 435.
Type-species: ***Chalcosia leptalina*** Kollar, 1844, *in* Hügel, *Kaschmir und das Reich der Siek* **4**(2) : 462 [= *Chalcosia pulchella* Kollar, 1844, *ibid.* **4**(2) : 461], by subsequent designation: Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 54.

STAPHYLINOCHROUS Butler, 1894, *Proc. zool. Soc. Lond.* **1893** : 676.
Type-species: ***Staphylinochrous whytei*** Butler, 1894, *ibid.* **1893** : 676, by original designation and monotypy.

‡*STENOPROCRIS* Gaede, 1926, *in* Seitz, *Gross-Schmett. Erde* **14** : 35.
An incorrect subsequent spelling of *Sthenoprocris* Hampson, 1919.

STHENOPROCRIS Hampson, 1919, *Novit. zool.* **26** : 275.
Type-species: ***Sthenoprocris malgassica*** Hampson, 1919, *ibid.* **26** : 275, by original designation and monotypy.
See also: ‡*Stenoprocris* Gaede, 1926.

STYLURA Burmeister, 1878, *Descr. phys. République Argent.* **5** : 390.
Type-species: ***Laemocharis forficula*** Herrich-Schäffer, 1855, *Samml. aussereur. Schmett.* **1**, pl. 54, fig. 299; 1858, *ibid.* **1** : 81, by monotypy.

SUBCLELEA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 292.
Type-species: ***Clelea (Subclelea) parabella*** Alberti, 1954, *ibid.* **30** : 293, by original designation.
Proposed as a subgenus of *Clelea* Walker, 1854.

SVENIA Alberti, 1954, *Mitt. zool. Mus. Berl.* **30** : 246 (nom. praeocc.).

Type-species: *Northia ulmivora* Graeser, 1888, *Berl. ent. Z.* **32** : 107, by original designation. Proposed as a subgenus of *Illiberis* Walker, 1854.

Svenia Alberti, 1954, is a junior homonym of *Svenia* Brotzen, 1937 (Protozoa); *Alterasvenia* Alberti, 1971, was proposed as the objective replacement name.

SYRINGURA Holland, 1893, *Psyche, Camb.* **6** : 394.

Type-species: ***Syringura uranopetes*** Holland, 1893, *ibid.* **6** : 394, by original designation and monotypy.

TASCIA Walker, 1856, *List Specimens lepid. Insects Colln Br. Mus.* **7** : 1600.

Type-species: ***Tascia chrysotelus*** Walker, 1856, *ibid.* **7** : 1600 [= *Euchromia finalis* Walker, 1854, *ibid.* **1** : 245], by monotypy.

See also: ‡*Tassia* Druce, 1910.

TASEMA Walker, 1856, *List Specimens lepid. Insects Colln Br. Mus.* **7** : 1597.

Type-species: ***Tasema bipars*** Walker, 1856, *ibid.* **7** : 1597, by monotypy.

‡*TASSIA* Druce, 1910, *Ann. Mag. nat. Hist.* (8)**5** : 402.

An incorrect subsequent spelling of *Tascia* Walker, 1856.

TETRACLONIA Jordan, 1913, *in* Seitz, *Gross-Schmett. Erde* **6** : 24.

Type-species: ***Tetraclonia saucia*** Jordan, 1913, *ibid.* **6** : 24, by original designation.

‡*THAUMASTOPHLEBS* Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 309.

An incorrect subsequent spelling of *Thaumastophleps* Jordan, 1907.

THAUMASTOPHLEPS Jordan, 1907, *in* Seitz, *Gross-Schmett. Erde* **10** : 14.

Type-species: ***Syntomis expansa*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **31** : 73, by monotypy.

See also: ‡*Thaumastophlebs* Bryk, 1936.

THERESIA Spuler, 1906, *in* Hofmann, *Schmett. Eur.* **2** : 165 (nom. praeocc.).

Type-species: *Zygaena ampellophaga* Bayle-Barelle, 1808, *G. Soc. d'Incoraggiamento Sci. Milano* **2** : 2, by monotypy.

Theresia Spuler, 1906, is a junior homonym of *Theresia* Robineau-Desvoidy, 1830 (Insecta : Diptera); *Theresimima* Strand, 1917, was proposed as the objective replacement name.

THERESIMIMA Strand, 1917, *Int. ent. Z.* **10** : 137 (objective replacement name for *Theresia* Spuler, 1906, nom. praeocc.).

Type-species: ***Zygaena ampellophaga*** Bayle-Barelle, 1808, *G. Soc. d'Incoraggiamento Sci. Milano* **2** : 2, by monotypy of *Theresia* Spuler, 1906.

See also: *Theresia* Spuler, 1906.

THERMOCHROUS Hampson, 1910, *Proc. zool. Soc. Lond.* **1910** : 488.

Type-species: ***Thermochrous fumicincta*** Hampson, 1910, *ibid.* **1910** : 488, by original designation.

THERMOPHILA Hübner, [1819], *Verz. bekannt. Schmett.*: 117.

Type-species: ***Sphinx viciae*** [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend*: 45, by subsequent designation: Holik & Sheljuzhko, 1957, *Mitt. münch. ent. Ges.* **47** : 144.

Holik & Sheljuzhko (loc. cit.) cited *meliloti* Esper, [1793], as the type-species; this was placed in synonymy under *viciae* [Denis & Schiffermüller], 1775, by Hübner (loc. cit.).

THYMARA Doubleday, 1843, *Zoologist* **1** : 197.

Type-species: ***Thymara zaida*** Doubleday, 1843, *ibid.* **1** : 198, by monotypy.

See also: ‡*Phimara* Pagenstecher, 1909.

THYRASSIA Butler, 1876, *J. Linn. Soc.* (Zool.) **12** : 355.

Type-species: ***Syntomis subcordata*** Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 132, by original designation and monotypy.

THYRINA Poujade, 1886, *Bull. Soc. ent. Fr.* **1886** : 143.

Type-species: ***Thyrina elegans*** Poujade, 1886, *ibid.* **1886** : 143, by monotypy.

TOOSA Walker, 1856, *List Specimens lepid. Insects Colln Br. Mus.* **8** : 64.
Type-species: ***Toosa glaucopiformis*** Walker, 1856, *ibid.* **8** : 65, by monotypy.

TRIACANTHIA Romieux, 1937, *Mitt. schweiz. ent. Ges.* **17** : 124.
Type-species: ***Triacanthia filictorum*** Romieux, 1937, *ibid.* **17** : 126, by original designation and monotypy.

TRICHOBAPTES Holland, 1893, *Jl N. Y. ent. Soc.* **1** : 184.
Type-species: ***Trichobaptes sexstriata*** Holland, 1893, *ibid.* **1** : 184 [= *Melittia auristrigata* Plötz, 1880, *Stettin. ent. Ztg* **41** : 77], by original designation and monotypy.
Originally described in the Sesiidae [= Aegeriidae]; subsequently transferred to the Zygaenidae : Charideinae (Hampson, 1918, *Novit. zool.* **25** : 382).

TRIPROCRIS Grote, 1873, *Bull. Buffalo Soc. nat. Sci.* **1** : 35.
Type-species: ***Procris smithsoniana*** Clemens, 1860, *Proc. Acad. nat. Sci. Philad.* **1860** : 540, by original designation and monotypy.

TRYPANOPHORA Kollar, 1844, *in* Hügel, *Kaschmir und das Reich der Siek* **4(2)** : 457.
Type-species: ***Trypanophora semihyalina*** Kollar, 1844, *ibid.* **4**(2) : 457, by original designation and monotypy.
See also: ‡*Tryphanonophora* Bryk, 1936; ‡*Tryphanophora* Piepers & Snellen, 1903.

‡*TRYPHANONOPHORA* Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 147.
An incorrect subsequent spelling of *Trypanophora* Kollar, 1844.

‡*TRYPHANOPHORA* Piepers & Snellen, 1903, *Tijdschr. Ent.* **45** : 217.
An incorrect subsequent spelling of *Trypanophora* Kollar, 1844.

TURNERIPROCRIS Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 304 (objective replacement name for *Neoprocris* Turner, 1926, nom. praeocc.).
Type-species: ***Procris dolens*** Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 112, by original designation and monotypy for *Neoprocris* Turner, 1926.
See also: *Neoprocris* Turner, 1926.

URODOPSIS Jordan, 1913, *in* Seitz, *Gross-Schmett. Erde* **6** : 29.
Type-species: ***Urodus subcaeruleus*** Dognin, 1910, *Hétérocères nouv. de l'Amérique du Sud* **1** : 43, by original designation.

USGENTA Holik & Sheljuzhko, 1956, *Mitt. münch. ent. Ges.* **46** : 237.
Type-species: ***Zygaena huguenini*** Staudinger, 1887, *Stettin. ent. Ztg* **48** : 73, by original designation and monotypy.
Proposed as a subgenus of *Zygaena* Fabricius, 1775.

VOGLERIA Weyenbergh, 1876, *Boln Acad. nac. Cienc. Córdoba* **2** : 241.
Type-species: ***Vogleria caudata*** Weyenbergh, 1876, *ibid.* **2** : 241, by monotypy.

XENARES Herrich-Schäffer, 1856, *Samml. aussereur. Schmett.* **1** : 7; 1858, *ibid.* **1** : 58.
Type-species: ***Xenares fortunii*** Herrich-Schäffer, 1856, *ibid.* **1** : 7; 1854, *ibid.* **1**, pl. 43, fig. 223 (non-binominal) [= *Euchromia triadum* Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 257], by monotypy.
See also: *Collestis* Wallengren, 1861.

XENOPROCRIS Romieux, 1937, *Mitt. schweiz. ent. Ges.* **17** : 127.
Type-species: ***Xenoprocris jordani*** Romieux, 1937, *ibid.* **17** : 129, by original designation and monotypy.

YASUMATSUIA Strand, 1936, *Folia zool. hydrobiol.* **9** : 167 (objective replacement name for *Hyala* Burgeff, 1926, nom. praeocc.).
Type-species: ***Zygaena loyselis*** Oberthür, 1876, *Étud. d'Ent.* **1** : 34, by subsequent designation for *Hyala* Burgeff, 1926.
See also: *Hyala* Burgeff, 1926.

ZAMA Herrich-Schäffer, 1856, *Samml. aussereur. Schmett.* **1** : 7.
Type-species: ***Zama cyanecula*** Herrich-Schäffer, 1856, *ibid.* **1** : 7; 1854, *ibid.* **1,** pl. [43], fig. 224 [non-binominal] [= *Glaucopis nigrigemma* Walker, 1854, *List Specimens lepid. Insects Colln Br. Mus.* **1** : 141], by monotypy.
Not recorded by Neave (1939–66, *Nomencl. zool.* **1–6**).
See also: *Northia* Walker, 1854.

ZEUXIPPA Herrich-Schäffer, 1856, *Samml. aussereur. Schmett.* **1** : 7.
Type-species: ***Sphinx pulchra*** Drury, 1773, *Ill. exot. Insects* **2** : 52, pl. 29, fig. 3, Index, p. [91], by monotypy.
Herrich-Schäffer (loc. cit.) erroneously attributes the name *pulchra* to Donovan.

‡*ZIGAENA* Lucas, 1849, *Explor. scient. Algérie*, Zool. **2**(3) : 527.
An incorrect subsequent spelling of *Zygaena* Fabricius, 1775.

ZIKANELLA Hering, 1932, *Dt. ent. Z. Iris* **46** : 153, 154.
Type-species: ***Zikanella rubrivitta*** Hering, 1932, *ibid.* **46** : 153, by original designation and monotypy.

ZUTULBA Kirby, 1892, *Synonymic Cat. Lepid. Heterocera* **1** : 80 (objective replacement name for *Anteris* Wallengren, 1865, nom. praeocc.).
Type-species: ***Neurosymploca zelleri*** Wallengren, 1860, *Wien. ent. Monatschr.* **4** : 39, by original designation for and monotypy of *Anteris* Wallengren, 1865.
See also: *Anteris* Wallengren, 1865.

‡*ZYAENA* Bryk, 1936, *in* Strand, *Lepid. Cat.* **71** : 124.
An incorrect subsequent spelling of *Zygaena* Fabricius, 1775.

ZYGAENA Fabricius, 1775, *Syst. Ent.*: 550.
Type-species: ***Sphinx filipendulae*** Linnaeus, 1758, *Syst. Nat.* ed. X, **1** : 494, by subsequent designation: Latreille, 1810, *Considérations générales*: 441.
See also: *Anthracocera* Agassiz, 1846; *Anthrocera* Scopoli, 1777; ‡*Zigaena* Lucas, 1849; ‡*Zyaena* Bryk, 1936; ‡*Zyngaena* Tremewan, 1968.

†***ZYGAENITES*** Burgeff, 1951, *Biol. Zbl.* **70** : 3.
Type-species: ***Zygaenites controversus*** Burgeff, 1951, *ibid.* **70** : 3, by monotypy.
A fossil genus and species. Not recorded by Neave (1939–66, *Nomencl. zool.* **1–6**).

‡†*ZYGAENITES* Reiss, 1936, *Ent. Rdsch.* **53** : 556 (nomen nudum).
Although associated with *Zygaena miocaenica* Reiss, 1936, the name can only be treated as a nomen nudum and is therefore unavailable. Reiss (loc. cit.) stated that he would not wish to erect a new genus such as *Zygaenites* for the species.

ZYGAENOPROCRIS Hampson, 1900, *J. Bombay nat. Hist. Soc.* **13** : 225.
Type-species: ***Zygaenoprocris chalcochlora*** Hampson, 1900, *ibid.* **13** : 225, by original designation and monotypy.

‡*ZYNGAENA* Tremewan, 1968, *Proc. Trans. Br. ent. nat. Hist. Soc.* **1** : 55.
An incorrect subsequent spelling of *Zygaena* Fabricius, 1775.

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taikozana Matsumura, Euphacusa
tamatavana Oberthür, Perrotia; Boisduvalodes
tenebrosa Walker, Glaucopis; Phacusa
tenuis Butler, Northia; Hedina
tettigonioides Heylaerts, Leptothrix
thallo Linnaeus, Papilio; Chalcosia
thaumasta Jordan, Caprima; Cyanidia
thecloides Walker, Didina
thoracica Walker [1864], Saliunca
thoracica Walker [1856], Tipulodes; Saliunca
thyridota Turner, Homophylotis
timon Druce, Coementa
tiphys Boisduval, Amalthocera; Amathocera; Callibaptes
togoensis Alberti, Aethioprocris
torta Butler, Semioptila
tortricalis Druce, Gingla; Euclimacia; Euclimaciopsis
transalpina Esper, Sphinx; Biezankoia; Burgeffia; Polymorpha
transiens Alberti, Funeralia
translucida Butler, Elcysma
trefurthi Gaede, Astyloneura
triadum Walker, Euchromia; Collestis; Xenares
tricolor Hope, Eterusia; Heterusia
tricolor Walker, Procris; Hestiochora
tricoloratus Semper, Pidorus; Allocaprima
triplex Plötz, Diospage; Lamprochrysa
triplex Plötz sensu Hampson, Diospage; Lamprochrysa
tristis Mell, Phlebohecta; Scotopais
turcosa Retzius, Adscita; Atychia; Bradyptesis; Ino; Procris

ulmivora Graeser, Northia; Alterasvenia; Svenia
unipuncta Swinhoe, Pteroceropsis
uranopetes Holland, Syringura

variata Swinhoe, Chalcosiopsis
venosa Walker, Herpa; Neoherpa
vetulina Jordan, Chalconycles
vicaria Walker, Euchromia; Cnemolopha
viciae [Denis & Schiffermüller], Sphinx; Thermophila
virescens Hampson, Monoschalis
virginalis Herrich-Schäffer, Milleria
viridipulverulenta Guérin-Méneville, Procris; Pollanisus

wallengreni Kirby, Neurosymploca
westwoodi Snellen van Vollenhoven, Agalope; Elcysma
whytei Butler, Staphylinochrous

xena Jordan, Gonioprocris
xuthomelas Jordan, Clematoessa

zaida Doubleday, Thymara
zelleri Wallengren, Neurosymploca; Anteris; Zutulba
zelotypia Hering, Mimascaptesyle
zenotea Walker, Pidorus; Codane
zenotia Doubleday, Gynautocera; Codane
zuleika Doubleday, Gynautocera; Chalcophaedra
zygaenoides Felder, Euctenia; Orna

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A CATALOGUE OF THE FAMILY-GROUP AND GENUS-GROUP NAMES OF THE GELECHIIDAE, HOLCOPOGONIDAE, LECITHOCERIDAE AND SYMMOCIDAE (LEPIDOPTERA)

K. SATTLER

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BY

KLAUS SATTLER + ref

Pp. 153–282

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SYNOPSIS

All the family-group and genus-group names (including variations in spelling) of the Gelechiidae, Holcopogonidae, Lecithoceridae and Symmocidae are listed alphabetically, with citations of their type-species. Bibliographical references are given to the original descriptions, subsequent designations of type-species, and subjective synonymies. Eighteen new synonymies are introduced (4 families, 9 genera, 5 type-species). One subfamily name is given family status. Two previously synonymized genera are recognized as valid. Four generic names and three specific names are recalled from synonymy for taxa previously known under other names. Twenty genus-group names are transferred to other families. Two type-species are newly designated.

INTRODUCTION

THE following catalogue contains the family-group and genus-group names of the lepidopterous family Gelechiidae. Also included are the families Holcopogonidae, Lecithoceridae and Symmocidae. The latter families have been separated from the Gelechiidae s. str. in recent years and therefore have not yet been widely used in the literature. Undoubtedly there are still a number of genera to be transferred from the Gelechiidae s. str. to the other three families. This catalogue also contains all genera which after 1900 were placed temporarily in the Gelechiidae s. str. Excluded is the family Oecophoridae, which was considered by some authors to be a subfamily of the Gelechiidae. However, genera of Oecophoridae which have been placed erroneously as Gelechiidae s. str. are included. A clear separation of Gelechiidae and Oecophoridae on a world basis did not take place until Meyrick revised the two families (1922, *Genera Insect.* **180** [Oecophoridae]; 1925, *ibid.* **184** [Gelechiidae]). Genus-group names which are not currently placed in the Gelechiidae s. str. are marked with an asterisk (*).

This catalogue contains all family-group and genus-group names including variations in spelling (justified and unjustified emendations; incorrect original and subsequent spellings) and nomina nuda. A serious attempt has been made to cover all nomenclaturally available names. Incorrect subsequent spellings, which have no nomenclatural status, have been included whenever found; however, no systematic search was made for such names. If a name was misspelt in the same way by more than one author, reference is made to the first usage only.

In the past a number of genera have been attributed to the wrong author either inadvertently or deliberately because that author had an erroneous concept of the genus. Misidentifications, incorrect usage, and incorrect authorships of genera have been included in this catalogue in the more important instances only.

The type-species of each genus is given, including its original reference, and the mode of its fixation is stated, i.e. by original designation, by monotypy, by subsequent designation, or by present designation. Incorrect designations of the type-species which are earlier than the currently accepted valid designation are recorded and discussed. Subsequent incorrect type-designations are recorded only if they have been used in important works or have been widely accepted in the past.

Under the *International Code of Zoological Nomenclature* Article 70 (a), the case of a misidentified type-species has to be referred to the International Commission on Zoological Nomenclature. In the interest of stability the Commission should be asked to designate formally as the type-species in each of the following cases the nominal one actually involved:

Cleodora Stephens, 1834, type-species: *Phalaena* (*Tinea*) *lappella* Linnaeus, 1758;
Microsetia Stephens, 1829, type-species: *Tinea sexguttella* Thunberg, 1794;
Nannodia Heinemann, 1870, type-species: *Tinea sexguttella* Thunberg, 1794;
**Thyrocopa* Meyrick, 1883, type-species: *Thyrocopa abusa* Walsingham, 1907.

The type-designations by Boisduval (1836, *Hist. nat. Insect.*, Lépid. **1**) do not fulfil the requirements of the *International Code of Zoological Nomenclature*, Article 69 (a) (iii) and are therefore not accepted. For details see under *Lita* Treitschke, 1833; *Microsetia* Stephens, 1829; or *Rhinosia* Treitschke, 1833.

Duponchel (*in* Godart, *Hist. nat. Lépid. Papillons Fr.*) gives at the beginning of each volume diagnoses of the included genera, sometimes in the form of a key, which are accompanied by the names of the species which he considered to be the type-species (see Duponchel, 1829, *ibid.* **7** (2) : 102).

The type-designations by Westwood (1840, *Introd. mod. Classif. Insects* **2**, *Synopsis Genera Br. Insects*) have been validated by the International Commission on Zoological Nomenclature (1922, Opinion 71, *Smithson. misc. Collns* **73** : 16–18).

Type-species are designated in this catalogue for *Chrysia* Bruand, 1850, and *Scythropiodes* Matsumura, 1931.

Each generic name has been checked for homonymy in the catalogues of Neave (1939–66, *Nomencl. zool.* **1–6**). All senior homonyms have been checked in the original literature for validity and spelling. For the following genus-group names, which were found to be junior homonyms, no replacement names are currently available. No new names should be proposed until the taxonomic status of these genera has been thoroughly examined.

Aspasiodes Janse, 1958, nom. praeocc.;
Biloba Janse, 1954, nom. praeocc.;
**Gaphara* Walker, 1864, nom. praeocc.;
Ilarches Meyrick, 1933, nom. praeocc.

The following junior homonyms are here replaced by junior subjective synonyms:

Atoponeura Busck, 1914, nom. praeocc., by *Eunomarcha* Meyrick, 1923;
Argyritis Heinemann, 1870, nom. praeocc., by *Eulamprotes* Bradley, 1971;
**Gasmara* Walker, 1864, nom. praeocc., by *Antiochtha* Meyrick, 1905;
Harpagus Stephens, 1834, nom. praeocc., by *Syncopacma* Meyrick, 1925;
Helina Guenée, 1849, nom. praeocc., by *Mirificarma* Gozmány, 1955;
Noeza Walker, 1866, nom. praeocc., by *Plocamosaris* Meyrick, 1912.

The following junior homonym is here considered to be a junior subjective synonym:

Microgonia* Popescu-Gorj & Căpușe, 1968, nom. praeocc., **syn. n. of *Apatema* Walsingham, 1900.

Names that have been proposed expressly to replace junior homonyms, and junior objective synonyms that have been used for the same purpose, are referred to in this catalogue as objective replacement names. Junior subjective synonyms that have been used to replace preoccupied senior synonyms are referred to as subjective replacement names.

Subjective synonymy of the genera is recorded. Reference is made to the first author who formally synonymized a genus. A synonymy as the automatic result of the inclusion of the type-species in another genus is only recorded in an exceptional case (see *Anaphaula* Walsingham, 1904). Some genera have been synonymized in the past with more than one other genus; their current status is therefore expressly mentioned. If genera have been placed repeatedly in synonymy and brought out of it, such fluctuations are not recorded. Published synonymies have sometimes been overlooked or deliberately ignored by other authors. This is particularly apparent in the European literature, where many lepidopterists rigidly followed an established system (Rebel, 1901, or Spuler, 1910), ignoring more recent developments. It is often impossible to decide whether a published change has been rejected for scientific reasons, or whether it has just been ignored for the sake of convenience.

Information on subjective synonymy has been taken generally from the literature. A number of genera and type-species will have to be synonymized in future, while others must be brought out of synonymy. However, this catalogue is not the place for a detailed discussion of the taxonomic status of genera and species. A limited number of new synonymies have to be introduced here, mostly in order to provide a subjective replacement name for a junior homonym, or because an unnecessary replacement name has to be rejected. Subjective synonymy of the type-species is given as far as necessary to establish its valid name. If a type-species is currently considered to be a junior synonym, its senior synonym is also cited in its original binomen with full original reference, and reference to the first author who formally synonymized the two species.

The following new synonymies are introduced:

Anacampsidae Bruand, 1850, **syn. n.** of Gelechiidae Stainton, 1854 (see p. 161);
Chrysoesthiidae Paclt, 1947, **syn. n.** of Gelechiidae Stainton, 1854;
Timyridae Clarke, 1955, **syn. n.** of Lecithoceridae Le Marchand, 1947;
Physoptilidae Meyrick, 1914, **syn. n.** of Gelechiidae Stainton, 1854;

Chrysia Bruand, 1850, **syn. n.** of *Chrysoesthia* Hübner, [1825];
Conquassata* Gozmány, 1957, **syn. n. of *Parasymmoca* Rebel, 1903;
Harpagus Stephens, 1834, nom. praeocc., **syn. n.** of *Syncopacma* Meyrick, 1925;
Helina Guenée, 1849, nom. praeocc., **syn. n.** of *Mirificarma* Gozmány, 1955;
Klaussattleria Căpuşe, 1968, **syn. n.** of *Pseudotelphusa* Janse, 1958;
Microgonia* Popescu-Gorj & Căpuşe, 1965, nom. praeocc., **syn. n. of *Apatema* Walsingham, 1900;
Nastocerella* Fletcher, 1940, **syn. n. of *Nastoceras* Chrétien, 1922;
Neochrista Meyrick, 1923, **syn. n.** of *Plocamosaris* Meyrick, 1912;
Symmoletria* Gozmány, 1963, **syn. n. of *Parasymmoca* Rebel, 1903;

Gelechia (*Teleia*) *dorsivittella* Zeller, 1873 (December), **syn. n.** of *Eidothea vagatioella* Chambers, 1873 (October) (*Eidothea* Chambers, 1873);
Carpatolechia dumitrescui Căpuşe, 1964, **syn. n.** of *Tinea decorella* Haworth, 1812 (*Carpatolechia* Căpuşe, 1964);
[*Tinea*] *morizella* Geyer, [1836], **syn. n.** of *Oecophora moritzella* Treitschke, 1835 (*Cosmardia* Povolny, 1965);
Gelechia prorepta Meyrick, 1923, **syn. n.** of *Gelechia fulmenella* Busck, 1910 (*Sriferia* Hodges, 1966);
Gelechia (*Brachmia*) *pictella* Zeller, 1839, **syn. n.** of *Phalaena* (*Tinea*) *wilkella* Linnaeus, 1758 (*Argyritis* Heinemann, 1870).

The name Lecithocerinae, previously used for a subfamily of the Gelechiidae is here given family status: Lecithoceridae **stat. n.**

The following previously synonymized genera are here recognized as valid:

Epidiopteryx* Rebel, 1916, **gen. rev.;
Ficulea Walker, 1864, **gen. rev.**

The following generic and specific names are recalled from synonymy for taxa previously known under other names:

Nastoceras* Chrétien, 1922, **nom. rev.;
Parasymmoca* Rebel, 1903, **nom. rev.;
Pseudotelphusa Janse, 1958, **nom. rev.**;
Telphusa Chambers, 1872, **nom. rev.**;
Gelechia fulmenella Busck, 1910, **nom. rev.** (*Sriferia* Hodges, 1966);
Oecophora moritzella Treitschke, 1835, **nom. rev.** (*Cosmardia* Povolny, 1965);
Eidothea vagatioella Chambers, 1873, **nom. rev.** (*Eidothea* Chambers, 1873).

Transfers of genera to other families are recorded in the catalogue with a reference to the first author who placed a genus in another family. The following genera are here transferred to other families:

**Achoria* Meyrick, 1904, transferred from Gelechiidae to Lecithoceridae;
**Alloclita* Staudinger, 1859, transferred from Oecophoridae to Cosmopterigidae;
**Aproopta* Turner, 1919, transferred from Glyphipterigidae to Stenomidae;
Asapharcha Meyrick, 1920, transferred from Xyloryctidae to Gelechiidae;
Bagdadia Amsel, 1949, transferred from Scythrididae to Gelechiidae;
Baryzancla Turner, 1933, transferred from Oecophoridae to Gelechiidae;
Brachyzancla Turner, 1947, transferred from Oecophoridae to Gelechiidae;
**Chionella* Amsel, 1935, transferred from Scythrididae to Symmocidae;
**Chionellidea* Amsel, 1940, transferred from Scythrididae to Symmocidae;
**Dragmatucha* Meyrick, 1908, transferred from Gelechiidae to Lecithoceridae;
**Idiopteryx* Walsingham, 1891, transferred from Gelechiidae to Lecithoceridae;
**Isotypa* Janse, 1954, transferred from Gelechiidae to Lecithoceridae;
**Liozancla* Turner, 1919, transferred from Cosmopterigidae to Metachandidae;
Physoptila Meyrick, 1914, transferred from Physoptilidae to Gelechiidae;
**Scalideutis* Meyrick, 1906, transferred from Cosmopterigidae to Metachandidae;
**Sisyrodonta* Meyrick, 1922, transferred from Gelechiidae to Lecithoceridae;
*†*Symmocites* Kusnezov, 1941, transferred from Gelechiidae to Symmocidae;
Thyrsomnestis Meyrick, 1929, transferred from Stenomidae to Gelechiidae;
**Xanthocera* Amsel, 1953, transferred from Gelechiidae to Lecithoceridae;
**Xanthocerodes* Amsel, 1955, transferred from Gelechiidae to Lecithoceridae.

This catalogue is based on the author's personal card index of the Gelechiidae s. l., which was begun in 1958. Various indexes in the British Museum (Natural History) have also been used (generic index of Lepidoptera; systematic index: family Gelechiidae; T. B. Fletcher's index of generic names of Microlepidoptera). The literature up to 31st December 1970 has been considered.

All references have been checked personally by the author. To establish the correct date of publication all available evidence has been taken into consideration, e.g. original wrappers and distribution lists of journals, special publications on the works of certain authors, and the publications of the International Commission on Zoological Nomenclature. In all instances the original journals were examined, because reprints sometimes differ in date of publication and pagination. In a few cases separates have been issued ahead of the journal (Rebel & Zerny, 1916). In such a case the separate has to be considered as the original publication. The printed date of publication in a book or journal is accepted as correct, unless there exists published evidence to the contrary. Meyrick's revision of the 'Gelechiadae' (*Genera Insect.* **184**) is here dated 1925 from the original wrapper. Fletcher stated on two occasions (1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : viii; 1942, *in* Janse, *Moths S. Afr.* **4** : xxi) that he had ' . . . strong reason to believe that no copies were published before 1st January 1926, . . . '. He therefore dated the work 1926, followed by some authors (e.g. Clarke, 1969), while others (e.g. Janse, 1949–63) adhered to 1925. As Fletcher did not present any evidence, his conclusion cannot be accepted. When the date of publication was found to be different from that generally accepted, or when there are discrepancies between the dates cited in important works (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11**; Gaede, 1937, *Lepid. Cat.* **79**; Meyrick, 1925, *Genera Insect.* **184**; Neave, 1939–66, *Nomencl.*

zool. **1–6**), the method by which the correct date was established is explained. Abbreviations of titles of periodicals follow Brown & Stratton, 1963–5, *World List of Scientific Periodicals* (ed. 4); those not included in that work follow the *List of Serial Publications in the British Museum (Natural History) Library* (1968). The titles of works not listed in either publication are abbreviated according to the principles of the 4th edition of the *World List*; their full titles are recorded in the Bibliography at the end of this catalogue.

Family-group and genus-group names are listed in separate sections. Gelechiidae, Holcopogonidae, Lecithoceridae, and Symmocidae are included in the same section. All names are arranged in alphabetical order; homonyms, synonyms and unavailable names are cross-referenced. Junior homonyms, junior objective synonyms and unavailable names (nomina nuda, rejected names, and incorrect spellings) are in non-bold italics; unavailable names are marked with a double dagger (‡). The alphabetical entries of all other generic names are in bold italics, as are the names of their type-species. Fossil genera are marked with a single dagger (†). All genus-group names which currently are not placed in the Gelechiidae s. str. are marked with an asterisk (*).

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SYSTEMATIC LIST OF THE FAMILY-GROUP NAMES

The family-group names of the Gelechiidae, Holcopogonidae, Lecithoceridae, and Symmocidae are here arranged in a systematic order following Meyrick (1925, *Genera Insect.* **184**). Meyrick's system has been slightly modified in order to accommodate the families which have been separated in recent years. Meyrick did not use subfamily or tribe divisions but divided the Gelechiidae into nine genus-groups which are indicated in the right column.

GELECHIOIDEA	
GELECHIIDAE	
ANACAMPSIDAE	
DICHOMERIDAE	
CHRYSOESTHIIDAE	
PHYSOPTILIDAE	
APATETRINAE	1. group (*Apatetris*)
ARISTOTELIINAE	2. group (*Aristotelia*)
GELECHIINAE	3. group (*Gelechia*)
GELECHIINI	
GNORIMOSCHEMINI	

STOMOPTERYGINAE	4. group (*Anacampsis*)
ANACAMPSINAE	4. group (*Anacampsis*)
CHELARIINAE	6. group (*Chelaria*)
HYPATIMINAE	5. group (*Protolechia*)
DICHOMERINAE	7. group (*Dichomeris*)
BRACHMIINAE	8. group (*Lecithocera*)
AUTOSTICHINAE	9. group (*Autosticha*)
LECITHOCERIDAE	8. group (*Lecithocera*)
TIMYRIDAE	
SYMMOCIDAE	8. group (*Lecithocera*)
HOLCOPOGONIDAE	8. group (*Lecithocera*)

ALPHABETICAL CATALOGUE OF THE FAMILY-GROUP NAMES

ANACAMPSIDAE Bruand, 1850, *Mém. Soc. Emul. Doubs* (1)**3**(3) : 40.
Type-genus: *Anacampsis* Curtis, 1827.
Anacampsidae Bruand, 1850, is currently considered to be a senior subjective synonym of Gelechiidae Stainton, 1854, **syn. n.**; however, it should be noted that the subfamilies Gelechiinae and Anacampsinae are currently considered to be distinct. From the time of its proposal the name Anacampsidae has apparently never been used for the family. To maintain stability an application should be made to the International Commission on Zoological Nomenclature to have Gelechiidae Stainton, 1854, placed on the *Official List of Family-Group Names in Zoology* and have the usage by Bruand, 1850, of Anacampsidae suppressed. The next usage of this family-group name is by Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 152, as Anacampsinae.

ANACAMPSINAE Bruand, 1850, *Mém. Soc. Emul. Doubs* (1)**3**(3) : 40.
Type-genus: *Anacampsis* Curtis, 1827.
Originally proposed as a family name; subsequently used as a subfamily name (Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 152).
See also: Anacampsidae Bruand, 1850.

APATETRINAE Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 151.
Type-genus: *Apatetris* Staudinger, 1879.

ARISTOTELIINAE Heslop, 1938, *Cat. Br. Lepid.* : 78.
Type-genus: *Aristotelia* Hübner, [1825].

AUTOSTICHINAE Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 153.
Type-genus: *Autosticha* Meyrick, 1886.
The name *Autosticha* Meyrick, 1886, was not originally included by Le Marchand although there can be little doubt that Autostichinae is based on that name.

BRACHMIINAE Heslop, 1938, *Cat. Br. Lepid.* : 80.
Type-genus: *Brachmia* Hübner, [1825].

CHELARIINAE Heslop, 1938, *Cat. Br. Lepid.* : 80.
Type-genus: *Chelaria* Haworth, 1828.
Chelariinae Heslop, 1938, is a senior objective synonym of Hypatiminae Kloet & Hincks, 1945. *Chelaria* Haworth, 1828, is a junior objective synonym of *Hypatima* Hübner, [1825].

CHRYSOESTHIIDAE Paclt, 1947, *Čas. čsl. Spol. ent.* **44** : 99.
Type-genus: *Chrysoesthia* Hübner, [1825].
Originally proposed as a replacement name for Heliodinidae Heinemann, [1876], *Schmett. Dtl. Schweiz* (2)**2**(2) : 518. Paclt replaced Heliodinidae by Chrysoesthiidae because he erroneously considered *Heliodines* Stainton, 1854, *Insecta Br.*, Lepid.: Tineina : 243, type-

species: *Phalaena* (*Tinea*) *roesella* Linnaeus, 1758, *Syst. Nat.* (ed. 10) **1** : 541, by monotypy, to be a junior objective synonym of *Chrysoesthia* Hübner, [1825]. The synonymy of *Heliodines* Stainton, 1854, with *Chrysoesthia* Hübner, [1825], was based on an incorrect type-species of *Chrysoesthia*. The family-group name Chrysoesthiidae Paclt, 1947, follows its type-genus *Chrysoesthia* Hübner, [1825], and thus is currently considered to be a junior subjective synonym of Gelechiidae Stainton, 1854. **Syn. n.**

DICHOMERIDAE Hampson, 1918, *Novit. zool.* **25** : 386, 391 [key].

Type-genus: *Dichomeris* Hübner, 1818.

Dichomeridae Hampson, 1918, is currently considered to be a junior subjective synonym of Gelechiidae Stainton, 1854 (Gaede, 1937, *Lepid. Cat.* **79** : 4), however, it should be noted that the subfamilies Gelechiinae and Dichomerinae are currently considered to be distinct.

See also: Dichomerinae Hampson, 1918; ‡Dichomerisinae Heslop, 1938.

DICHOMERINAE Hampson, 1918, *Novit. zool.* **25** : 386, 391 [key].

Type-genus: *Dichomeris* Hübner, 1818.

Originally proposed as a family name; subsequently used as a subfamily name (Heslop, 1938, *Cat. Br. Lepid.* : 80 [as ‡Dichomerisinae]).

See also: Dichomeridae Hampson, 1918; ‡Dichomerisinae Heslop, 1938.

‡DICHOMERISINAE Heslop, 1938, *Cat. Br. Lepid.* : 80.

Incorrect formation of the subfamily name based on *Dichomeris* Hübner, 1818.

See also: Dichomeridae Hampson, 1918; Dichomerinae Hampson, 1918.

‡GELECHIADAE Meyrick, 1895, *Handb. Br. Lepid.* : 561, 562 [key], 568.

Incorrect formation of the family name based on *Gelechia* Hübner, [1825].

See also: Gelechiidae Stainton, 1854.

‡GELECHIANAE Walsingham, 1891, *Trans. ent. Soc. Lond.* **1891** : 92.

Incorrect formation of the subfamily name based on *Gelechia* Hübner, [1825].

See also: Gelechiinae Stainton, 1854.

‡GELECHIDAE Stainton, 1854, *List Specimens Br. Animals Colln Br. Mus.* **16** : 52.

Incorrect (original) formation of the family name based on *Gelechia* Hübner, [1825].

See also: Gelechiidae Stainton, 1854.

GELECHIIDAE Stainton, 1854, *List Specimens Br. Animals Colln Br. Mus.* **16** : 52.

Type-genus: *Gelechia* Hübner, [1825].

Originally proposed as ‡Gelechidae, which is an incorrect formation of the family name based on *Gelechia* Hübner, [1825]; subsequently emended to Gelechiidae (Butler, 1880, *Ann. Mag. nat. Hist.* (5)**5** : 394).

Gelechiidae Stainton, 1854, is currently considered to be a junior subjective synonym of Anacampsidae Bruand, 1850, **syn. n.**; however, it should be noted that the subfamilies Gelechiinae and Anacampsinae are currently considered to be distinct. From the time of its proposal the name Anacampsidae has apparently never been used for the family. To maintain stability an application should be made to the International Commission on Zoological Nomenclature to have Gelechiidae Stainton, 1854, placed on the *Official List of Family-Group Names in Zoology* and have the usage by Bruand, 1850, of Anacampsidae suppressed.

See also: Chrysoesthiidae Paclt, 1947; Dichomeridae Hampson, 1918; ‡Gelechiadae Meyrick, 1895; ‡Gelechidae Stainton, 1854; Physoptilidae Meyrick, 1914.

‡GELECHIINA Börner, 1920, *in* Brohmer, *Fauna Dtl.* (ed. 2) : 345.

Incorrect formation of the suprafamily name based on *Gelechia* Hübner, [1825]. The suprafamily name has apparently never been used in its correct form Gelechioinea.

GELECHIINAE Stainton, 1854, *List Specimens Br. Animals Colln Br. Mus.* **16** : 52.

Type-genus: *Gelechia* Hübner, [1825].

Originally proposed as a family name; subsequently used as a subfamily name but incorrectly formed ‡Gelechianae (Walsingham, 1891, *Trans. ent. Soc. Lond.* **1891** : 92); correctly emended to Gelechiinae (Spuler, 1898, *in* Reutti, *Übersicht Lepid.-Fauna Grossherzogtums Baden* (ed. 2) : 241).

GELECHIINI Stainton, 1854, *List Specimens Br. Animals Colln Br. Mus.* **16** : 52.
Type-genus: *Gelechia* Hübner, [1825].
Originally proposed as a family name; subsequently used as a tribe name (Handlirsch, 1924, *in* Schröder, *Handb. Ent.* **3**: 884).

GELECHIOIDEA Stainton, 1854, *List Specimens Br. Animals Colln Br. Mus.* **16** : 52.
Type-genus: *Gelechia* Hübner, [1825].
Originally proposed as a family name; subsequently used as a superfamily name (Mosher, 1916, *Bull. Ill. St. Lab. nat. Hist.* **12** : [ii], 98).

‡GNORIMOSCHEMIDI Agenjo, 1968, *Graellsia* **23** [Cat. ordenador Lepid. España] Gelechiidae : [1].
Incorrect subsequent formation of the tribe name based on *Gnorimoschema* Busck, 1900.
See also: Gnorimoschemini Povolný, 1964.

GNORIMOSCHEMINI Povolný, 1964, *Cas. čsl. Spol. ent.* **61** : 332.
Type-genus: *Gnorimoschema* Busck, 1900.
See also: ‡Gnorimoschemidi Agenjo, 1968.

HOLCOPOGONIDAE Gozmány, 1967, *Acta zool. hung.* **13** : 271.
Type-genus: *Holcopogon* Staudinger, 1879.

HYPATIMINAE Kloet & Hincks, 1945, *Check List Br. Insects* : 129.
Type-genus: *Hypatima* Hübner, [1825].
Junior objective synonym of Chelariinae Heslop, 1938. *Hypatima* Hübner, [1825], is a senior objective synonym of *Chelaria* Haworth, 1828.

LECITHOCERIDAE Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 153.
Type-genus: *Lecithocera* Herrich-Schäffer, 1853.
Originally proposed as a subfamily name; here used as a family name. **Stat. n.**
See also: Timyridae Clarke, 1955.

LECITHOCERINAE Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 153.
Type-genus: *Lecithocera* Herrich-Schäffer, 1853.
See also: Lecithoceridae Le Marchand, 1947.

PHYSOPTILIDAE Meyrick, 1914, *J. Bombay nat. Hist. Soc.* **22** : 777.
Type-genus: *Physoptila* Meyrick, 1914.
Currently considered to be a junior subjective synonym of Gelechiidae Stainton, 1854. **Syn. n.**

STOMOPTERYGINAE Heslop, 1938, *Cat. Br. Lepid.* : 80.
Type-genus: *Stomopteryx* Heinemann, 1870.
Originally proposed as ‡Stomopteryxinae, which is an incorrect formation of the subfamily name based on *Stomopteryx* Heinemann, 1870; subsequently emended to Stomopteryginae (Kloet & Hincks, 1945, *Check List Br. Insects* : 129).

‡STOMOPTERYXINAE Heslop, 1938, *Cat. Br. Lepid.* : 80.
Incorrect (original) formation of the subfamily name based on *Stomopteryx* Heinemann, 1870.
See also: Stomopteryginae Heslop, 1938.

SYMMOCIDAE Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 326.
Type-genus: *Symmoca* Hübner, [1825].
Originally proposed as a subfamily name; subsequently used as a family name (Gozmány, 1963, *Acta zool. hung.* **9** : 67).

SYMMOCINAE Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 326.
Type-genus: *Symmoca* Hübner, [1825].
Originally proposed as a subfamily name; subsequently used as a family name (Gozmány, 1963, *Acta zool. hung.* **9** : 67).
See also: Symmocidae Gozmány, 1957.

TIMYRIDAE Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21.

Type-genus: *Timyra* Walker, 1864.

Currently considered to be a junior subjective synonym of Lecithoceridae Le Marchand, 1947. **Syn. n.** When proposing the name Timyridae Clarke was unaware of the existence of the family-group name Lecithocerinae Le Marchand, 1947. The latter name is here raised to family level, Lecithoceridae Le Marchand, 1947, and takes precedence over Timyridae Clarke, 1955.

ALPHABETICAL CATALOGUE OF THE GENUS-GROUP NAMES

****ABRACHMIA*** Amsel, 1968, *Stuttg. Beitr. Naturk.* **191** : 17.

Type-species: ***Abrachmia karachiella*** Amsel, 1968, *ibid.* **191** : 18, figs, by original designation and monotypy.

Currently considered to be a junior subjective synonym of *Hyperochtha* Meyrick, 1925 (Sattler, 1970, *Z. ArbGem. öst. Ent.* **21** : 100). *A. karachiella* Amsel, 1968, is currently considered to be a junior subjective synonym of *Onebala justa* Meyrick, 1910, *J. Bombay nat. Hist. Soc.* **20** : 458 (Sattler, 1970, *ibid.* **21** : 100).

Originally described in the Gelechiidae; subsequently transferred to the Timyridae [= Lecithoceridae] (Sattler, 1970, *ibid.* **21** : 100).

‡*ACAMPSIA* Westwood, 1840, *Introd. mod. Classif. Insects* **2**, *Synopsis Genera Br. Insects* : 110.

Incorrect subsequent spelling of *Acompsia* Hübner, [1825].

ACANTHOPHILA Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 320.

Type-species: ***Gelechia alacella*** Zeller, 1839, *Isis, Leipzig* **1839** : 199, by monotypy.

The type-species has been erroneously attributed to Duponchel, [1839], *in* Godart, *Hist. nat. Lépid. Papillons Fr.* **11** : 296, pl. 297, fig. 12, by several authors. According to Joannis, 1915, *Annls Soc. ent. Fr.* **84** : 70, Duponchel's description was published later than Zeller's.

See also: ‡*Acantophila* Osthelder, 1951.

‡*ACANTOPHILA* Osthelder, 1951, *Mitt. münch. ent. Ges.* **41**, Beilage (Schmett. Südbayerns) : 151.

Incorrect subsequent spelling of *Acanthophila* Heinemann, 1870.

‡*ACCOMPSIA* Bruand, 1850, *Mém. Soc. Emul. Doubs* (1)**3**(3) : 42.

Incorrect subsequent spelling of *Acompsia* Hübner, [1825].

****ACHORIA*** Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 257 [key], 405.

Type-species: ***Achoria inopina*** Meyrick, 1904, *ibid.* **29** : 405, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; here transferred to the Lecithoceridae (Common in litteris).

ACOMPSIA Hübner, [1825], *Verz. bekannter Schmett.* : 409.

Type-species: [***Phalaena***] ***cinerella*** Clerck, 1759, *Icon. Insect. rariorum* **1**, pl. 11, fig. 6, by subsequent designation: Duponchel, 1838, *in* Godart, *Hist. nat. Lépid. Papillons Fr.* **11** : 19.

Correct date of publication ([1825]) taken from Opinion 150, *Opin. Decl. int. Commn zool. Nom.* **2** : 166 (1943).

The type-species was included by Hübner as '*A. cinerella* Linn.'

Incorrect type-species: *Tinea tinctella* Hübner, 1796, *Samml. eur. Schmett.* **8** : 50, pl. 31, fig. 214, designated by Westwood, 1840, *Introd. mod. Classif. Insects* **2**, *Synopsis Genera Br. Insects* : 110. As there exists an earlier valid type-designation and as *T. tinctella* Hübner, 1796, is not one of the originally included nominal species of *Acompsia* Hübner, [1825], the type-designation by Westwood is invalid.

See also: ‡*Acampsia* Westwood, 1840; ‡*Accompsia* Bruand, 1850; *Brachycrossata* Heinemann, 1870; *Cathegesis* Walsingham, 1910; *Oxypteryx* Rebel, 1911.

ACRAEOLOGA Meyrick, 1921, *Ann. Transv. Mus.* **8** : 66.
Type-species: ***Acraeologa xerochroa*** Meyrick, 1921, *ibid.* **8** : 66, by monotypy.
Currently considered to be a junior subjective synonym of *Stomopteryx* Heinemann, 1870 (Sattler, 1968, *Dt. ent. Z.*, N. F. **15** : 123).

ACRIBOLOGA Meyrick, 1923, *Exot. Microlepidopt.* **2** : 622.
Type-species: ***Nothris malacodes*** Meyrick, 1910, *Trans. ent. Soc. Lond.* **1910** : 451, by original designation.

ACROPHILETIS Meyrick, 1932, *Exot. Microlepidopt.* **4** : 348.
Type-species: ***Acrophiletis cosmocrossa*** Meyrick, 1932, *ibid.* **4** : 348, by monotypy.

****ACROSYNTAXIS*** Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S. N. **8** : 334.
Type-species: ***Symmoca angustipennis*** Rebel, 1927, *Bull. Soc. ent. Égypte* (19. Année) **10** : 189, by original designation and monotypy.
Originally described in the Gelechiidae: Symmocinae; currently placed in the Symmocidae.

ACUTITORNUS Janse, 1951, *Moths S. Afr.* **5** : 234.
Type-species: ***Acutitornus munda*** Janse, 1951, *ibid.* **5** : 235, figs, by original designation and monotypy.

ADELOMORPHA Snellen, 1885, *Tijdschr. Ent.* **28** : 31.
Type-species: ***Adelomorpha ritsemae*** Snellen, 1885, *ibid.* **28** : 32, pl. 3, figs 1–3, by monotypy.

ADELPHOTROPHA Gozmány, 1955, *Annls hist.-nat. Mus. natn. hung.*, S. N. **6** : 310.
Type-species: ***Gelechia senectella*** Zeller, 1839, *Isis, Leipzig* **1839** : 199, by original designation.
Originally proposed as a subgenus of *Bryotropha* Heinemann, 1870. Currently considered to be a junior subjective synonym of *Bryotropha* Heinemann, 1870 (Sattler, 1971, *Entomologist's Gaz.* **22** : 107).

ADOXOTRICHA Meyrick, 1938, *Explor. Parc natn. Albert. Miss. G. F. de Witte* **14** : 15.
Type-species: ***Adoxotricha symbolistis*** Meyrick, 1938, *ibid.* **14** : 15, by monotypy.

ADRASTEIA Chambers, 1872, *Can. Ent.* **4** : 149.
Type-species: ***Adrasteia alexandriacella*** Chambers, 1872, *ibid.* **4** : 149, by subsequent designation: Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 56.
Currently considered to be a junior subjective synonym of *Telphusa* Chambers, 1872 (Meyrick, 1925, *Genera Insect.* **184** : 69). *Adrasteia* Chambers, 1872, has been used as the subjective replacement name for *Telphusa* Chambers, 1872, which erroneously has been considered to be a junior homonym of *Thelphusa* Latreille, 1828 (Sattler, 1960, *Dt. ent. Z.*, N. F. **7** : 63, 64).
See also: *Adrastia* Kirby, 1874.

ADRASTIA Kirby, 1874, *Zool. Rec.* (1872) **9** : 379.
Type-species: *Adrasteia alexandriacella* Chambers, 1872, *Can. Ent.* **4** : 149, by subsequent designation for *Adrasteia* Chambers, 1872: Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 56.
Unjustified emendation of *Adrasteia* Chambers, 1872. Not recorded by Neave, 1939–66, *Nomencl. zool.* **1–6**.

ADULLAMITIS Meyrick, 1932, *Exot. Microlepidopt.* **4** : 198.
Type-species: ***Adullamitis emancipata*** Meyrick, 1932, *ibid.* **4** : 198, by monotypy.
See also: ‡*Adullanitis* Gaede, 1937.

‡*ADULLANITIS* Gaede, 1937, *Lepid. Cat.* **79** : 347.
Incorrect subsequent spelling of *Adullamitis* Meyrick, 1932.

AEOLOTROCHA Meyrick, 1921, *Ann. Transv. Mus.* **8** : 78.
Type-species: ***Aeolotrocha generosa*** Meyrick, 1921, *ibid.* **8** : 78, by monotypy.

***AEROTYPIA** Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 82.
Type-species: ***Aerotypia pleurotella*** Walsingham, 1911, *ibid.* **4** : 82, fig. 19, pl. 3, fig. 3. by original designation and monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Cryptophasidae [= Xyloryctidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 7).

AFROSYMMOCA Gozmány, 1966, *Acta zool. hung.* **12** : 74.
Type-species: ***Afrosymmoca seydeli*** Gozmány, 1966, *ibid.* **12** : 74, fig. 2, by original designation.
Originally described and currently placed in the Symmocidae.

‡*AGANIPPE* Chambers, 1880, *J. Cincinn. Soc. nat. Hist.* **2** : 198 [legend to fig. 21].
Incorrect subsequent spelling of *Agnippe* Chambers, 1872.

AGATHACTIS Meyrick, 1929, *Exot. Microlepidopt.* **3** : 501.
Type-species: ***Agathactis toxocosma*** Meyrick, 1929, *ibid.* **3** : 501, by monotypy.

AGELIARCHIS Meyrick, 1923, *Exot. Microlepidopt.* **2** : 622.
Type-species: ***Ageliarchis rhizogramma*** Meyrick, 1923, *ibid.* **2** : 623, by monotypy.

AGNIPPE Chambers, 1872, *Can. Ent.* **4** : 194.
Type-species: ***Agnippe biscolorella*** Chambers, 1872, *ibid.* **4** : 195, by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 54.
The type-species was cited by Meyrick as '*A. bicolorella*, Chamb.'. *A. bicolorella* Meyrick, 1925, *Genera Insect.* **184** : 54, is an unjustified emendation of *A. biscolorella* Chambers, 1872.
See also: ‡*Aganippe* Chambers, 1880.

AGONOCHAETIA Povolný, 1965, *Acta ent. bohemoslovaca* **62** : 487.
Type-species: ***Agonochaetia incredibilis*** Povolný, 1965, *ibid.* **62** : 487, fig. 10, by original designation and monotypy.
See also: *Sautereopsis* Povolný, 1965.

AGRIASTIS Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 251.
Type-species: ***Agriastis peloptila*** Meyrick, 1914, *ibid.* **1914** : 251, by original designation.
Currently considered to be a junior subjective synonym of *Anacampsis* Curtis, 1827 (Busck, 1919, *Proc. ent. Soc. Wash.* **21** : 96).
See also: ‡*Agriastsi* Busck, 1919.

‡*AGRIASTSI* Busck, 1919, *Proc. ent. Soc. Wash.* **21** : 95.
Incorrect subsequent spelling of *Agriastis* Meyrick, 1914.

‡*AGROLAMPROTES* Popescu-Gorj & Nemeş, 1965, *Trav. Mus. Hist. nat. 'Grigore Antipa'* **5** : 157.
Incorrect subsequent spelling of *Argolamprotes* Benander, 1945.

***ALCIPHANES** Meyrick, 1925, *Genera Insect.* **184** : 12 [key], 207.
Type-species: ***Tingentera molybdantha*** Meyrick, 1908, *J. Bombay nat. Hist. Soc.* **18** : 454, by original designation and monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

***ALLOCLITA** Staudinger, 1859, *Stettin. ent. Ztg* **20** : 247.
Type-species: ***Alloclita recisella*** Staudinger, 1859, *ibid.* **20** : 247, by monotypy.
Originally not placed in a family; subsequently included in the Gelechi[i]dae (Wocke, 1861, *in* Staudinger & Wocke, *Cat. Lepid. Eur.* : 117); Gelechiidae: Gelechiinae (Rebel, 1901, *in* Staudinger & Rebel, *Cat. Lepid. palaearctischen Faunengebietes* **2** : 151); Hyponomeutidae [= Yponomeutidae] (Walsingham, 1905, *Entomologist's mon. Mag.* **41** : 126); Oecophoridae (Meyrick, 1911, *Ann. Transv. Mus.* **3** : 72); here transferred to the Cosmopterigidae.

ALLOCOTA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 258 [key], 419 (nom. praeocc.).
Type-species: *Allocota simulacrella* Meyrick, 1904, *ibid.* **29** : 420, by monotypy.

Allocota Meyrick, 1904, is a junior homonym of *Allocota* Motschulsky, 1860 (Coleoptera); *Allocotaniana* Strand, 1913, was proposed as the objective replacement name. Junior subjective synonym of *Chelaria* Haworth, 1828 (Meyrick, 1925, *Genera Insect.* **184** : 155); currently considered to be a junior subjective synonym of *Hypatima* Hübner, [1825] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 10, 113).

ALLOCOTANIANA Strand, 1913, *Arch. Naturgesch.* **79**(A 2) : 43 (objective replacement name for *Allocota* Meyrick, 1904, nom. praeocc.).

Type-species: ***Allocota simulacrella*** Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 420, by monotypy of *Allocota* Meyrick, 1904.

Currently considered to be a junior subjective synonym of *Hypatima* Hübner, [1825] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 10, 113, as *Allocota*, Meyrick, 1904).

ALLOPHLEBIA Janse, 1960, *Moths S. Afr.* **6** : 197.

Type-species: ***Allophlebia hemizancla*** Janse, 1960, *ibid.* **6** : 198, figs, by original designation and monotypy.

ALLOTELPHUSA Janse, 1958, *Moths S. Afr.* **6** : 96.

Type-species: ***Telphusa lathridia*** Meyrick, 1909, *Ann. Transv. Mus.* **2** : 11, pl. 4, figs 5, 6, by original designation and monotypy.

ALSODRYAS Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 250.

Type-species: ***Alsodryas lactaria*** Meyrick, 1914, *ibid.* **1914** : 250, by monotypy.

ALTENIA Sattler, 1960, *Dt. ent. Z.*, N. F. **7** : 16 and 17 [keys], 58.

Type-species: ***Gelechia perspersella*** Wocke, 1862, *in* Wocke & Staudinger, *Stettin. ent. Ztg* **23** : 236, by original designation and monotypy.

AMBLOMA Walsingham, 1908, *Proc. zool. Soc. Lond.* **1907** : 946.

Type-species: ***Ambloma brachyptera*** Walsingham, 1908, *ibid.* **1907** : 947, pl. 51, fig. 18, by original designation and monotypy.

Correct date of publication (1908, June 4th) taken from 'Notice' on the back cover of the Proceedings for 1908 (part 1).

AMBLYPALPIS Ragonot, 1886, *Bull. Soc. ent. Fr.* **1885** : 209.

Type-species: ***Amblypalpis olivierella*** Ragonot, 1886, *ibid.* **1885** : 209, by monotypy.

Correct date of publication (1886, April 28th) taken from original wrapper.

AMBLYPHYLLA Janse, 1960, *Moths S. Afr.* **6** : 199.

Type-species: ***Amblyphylla lophozancla*** Janse, 1960, *ibid.* **6** : 200, figs, by original designation and monotypy.

AMPHIGENES Meyrick, 1921, *Exot. Microlepidopt.* **2** : 436.

Type-species: ***Amphigenes tartarea*** Meyrick, 1921, *ibid.* **2** : 437, by monotypy.

****AMSELINA*** Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S. N. **8** : 337.

Type-species: ***Amselina olympi*** Gozmány, 1957, *ibid.* **8** : 337, fig. 7 H, by original designation.

Originally described in the Gelechiidae: Symmocinae; currently placed in the Symmocidae.

ANACAMPSIS Curtis, 1827, *Br. Ent.* **4**, no. 189.

Type-species: **[*Phalaena*] *populella*** Clerck, 1759, *Icon. Insect. rariorum* **1**, pl. 11, fig. 5, by original designation.

The type-species was cited by Curtis as '*Tinea populella* Linn.'

See also: *Agriastis* Meyrick, 1914; ‡*Anacompsis* Desmarest, (1857); *Aproaerema* Durrant, 1897; *Compsolechia* Meyrick, 1918; *Tachyptilia* Heinemann, 1870.

‡*ANACOMPSIS* Desmarest, (1857), *in* Chenu, *Encycl. Hist. nat.*, Papillons nocturnes : 269.

Incorrect subsequent spelling of *Anacampsis* Curtis, 1827.

ANANARSIA Amsel, 1959, *Stuttg. Beitr. Naturk.* **28** : 32.

Type-species: ***Anarsia lineatella*** Zeller, 1839, *Isis, Leipzig* **1839** : 190, by original designation.

Currently considered to be a junior subjective synonym of *Anarsia* Zeller, 1839 (Amsel, 1967, *Beitr. naturk. Forsch. SüdwDtl.* **26**(3) : 25).

ANAPATETRIS Janse, 1951, *Moths S. Afr.* **5** : 233.

Type-species: ***Epiphthora crystallista*** Meyrick, 1911, *Ann. Transv. Mus.* **2** : 229, by original designation and monotypy.

ANAPHAULA Walsingham, 1904, *Entomologist's mon. Mag.* **40** : 268.

Type-species: ***Gelechia gaditella*** Staudinger, 1859, *Stettin. ent. Ztg* **20** : 243, by original designation and monotypy.

Junior subjective synonym of *Aristotelia* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 41); subgenus of *Aristotelia* Hübner, [1825] (Gaede, 1937, *Lepid. Cat.* **79** : 44). Currently considered to be a junior subjective synonym of *Apatetris* Staudinger, 1879. Agenjo, 1968, *Graellsia* **23** [Cat. ordenador Lepid. España] Gelechiidae : [1], included *G. gaditella* Staudinger, 1859, in *Apatetris* Staudinger, 1879, thereby automatically synonymizing *Anaphaula* Walsingham, 1904 with *Apatetris* Staudinger, 1879.

ANAPTILORA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 257 [key], 390.

Type-species: ***Anaptilora isocosma*** Meyrick, 1904, *ibid.* **29** : 390, by original designation.

ANARSIA Zeller, 1839, *Isis, Leipzig* **1839** : 190.

Type-species: ***Tinea spartiella*** Schrank, 1802, *Fauna Boica* **2**(2) : 104, by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 153.

See also: *Ananarsia* Amsel, 1959.

ANASPHALTIS Meyrick, 1925, *Genera Insect.* **184** : 18 [key], 107.

Type-species: ***Ypsolophus renigerellus*** Zeller, 1839, *Isis, Leipzig* **1839** : 189, by original designation and monotypy.

ANASTOMOPTERYX Janse, 1951, *Moths S. Afr.* **5** : 269.

Type-species: ***Anastomopteryx angulata*** Janse, 1951, *ibid.* **5** : 270, figs, by original designation and monotypy.

ANASTREBLOTIS Meyrick, 1927, *Insects Samoa* **3** : 77.

Type-species: ***Anastreblotis calycopa*** Meyrick, 1927, *ibid.* **3** : 77, by monotypy.

ANATHYRSOTIS Meyrick, 1939, *Trans. R. ent. Soc. Lond.* **89** : 55.

Type-species: ***Anathyrsotis ceriochranta*** Meyrick, 1939, *ibid.* **89** : 55, by original designation and monotypy.

ANAXYRINA* Meyrick, 1918, *Exot. Microlepidopt.* **2 : 98.

Type-species: ***Anaxyrina cyanopa*** Meyrick, 1918, *ibid.* **2** : 99, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

ANDUSIA* Walker, 1866, *List Specimens lepid. Insects Colln Br. Mus.* **35 : 1836.

Type-species: ***Andusia alternella*** Walker, 1866, *ibid.* **35** : 1836, by monotypy.

Originally described in the Gelechi[i]dae; currently considered to be a junior subjective synonym of *Lecithocera* Herrich-Schäffer, 1853 (Gaede, 1937, *Lepid. Cat.* **79** : 516), which automatically places *Andusia* Walker, 1866, in the Lecithoceridae.

ANGUSTIPHYLLA Janse, 1960, *Moths S. Afr.* **6** : 193.

Type-species: ***Angustiphylla hylotropha*** Janse, 1960, *ibid.* **6** : 194, figs, by original designation and monotypy.

ANISOPLACA Meyrick, 1886, *Trans. N.Z. Inst.* **18** : 162 [key], 171.

Type-species: ***Anisoplaca ptyoptera*** Meyrick, 1886, *ibid.* **18** : 171, by monotypy.

‡*ANOECISIS* Walsingham, 1904, *Entomologist's mon. Mag.* **40** : 215 (nomen nudum).

Published without description or indication and associated species, together with ‡*Cecidophaga* Walsingham, 1904, (nomen nudum), ‡*Hypocecis* Walsingham, 1904, (nomen nudum), and ‡*Proactica* Walsingham, 1904, (nomen nudum), of which *Cecidophaga* and *Proactica* subsequently were made nomenclaturally available.

ANOMOXENA Meyrick, 1917, *Trans. ent. Soc. Lond.* **1917** : 28.
Type-species: ***Anomoxena spinigera*** Meyrick, 1917, *ibid.* **1917** : 29, by original designation.

‡*ANORTHODISCA* Gaede, 1937, *Lepid. Cat.* **79** : 442 [under *punctipennella*].
Incorrect subsequent spelling of *Anorthosia* Clemens, 1860.

ANORTHOSIA Clemens, 1860, *Proc. Acad. nat. Sci. Philad.* **1860** : 161.
Type-species: ***Anorthosia punctipennella*** Clemens, 1860, *ibid.* **1860** : 161, by monotypy.
Currently considered to be a junior subjective synonym of *Dichomeris* Hübner, 1818 (Meyrick, 1925, *Genera Insect.* **184** : 174).
See also: ‡*Anorthodisca* Gaede, 1937; *Carna* Walker, 1864; *Sagaritis* Chambers, 1872.

ANTERETHISTA Meyrick, 1914 (October 8th), *Trans. ent. Soc. Lond.* **1914** : 237.
Type-species: ***Anterethista heteractis*** Meyrick, 1914, *ibid.* **1914** : 237, by monotypy.
Currently considered to be a junior subjective synonym of *Beltheca* Busck, 1914 (April 30th) (Meyrick, 1926, *Exot. Microlepidopt.* **3** : 270)[1].
See also: ‡*Antherethista* Gaede, 1937.

‡*ANTHERETHISTA* Gaede, 1937, *Lepid. Cat.* **79** : 340 [under *phosphoropa*].
Incorrect subsequent spelling of *Anterethista* Meyrick, 1914.

ANTHINORA Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 255.
Type-species: ***Anthinora xanthophanes*** Meyrick, 1914, *ibid.* **1914** : 256, by monotypy.

ANTHISTARCHA Meyrick, 1925, *Genera Insect.* **184** : 18 [key], 67.
Type-species: ***Gelechia geniatella*** Busck, 1914, *Proc. U.S. natn. Mus.* **47** : 13, by original designation and monotypy.
See also: ‡*Antistarcha* Lima, 1945.

****ANTIOCHTHA*** Meyrick, 1905, *J. Bombay nat. Hist. Soc.* **16** : 598.
Type-species: ***Antiochtha balbidota*** Meyrick, 1905, *ibid.* **16** : 598, by monotypy.
Currently considered to be a junior subjective synonym of *Gasmara* Walker, 1864 (Meyrick, 1925, *Genera Insect.* **184** : 229), and therefore available as the subjective replacement name for *Gasmara* Walker, 1864, nom. praeocc.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

‡*ANTISTARCHA* Lima, 1945, *Insetos Brasil* **5** : 273.
Incorrect subsequent spelling of *Anthistarcha* Meyrick, 1925.

****APATEMA*** Walsingham, 1900, *Entomologist's mon. Mag.* **36** : 219.
Type-species: ***Apatema mediopallidum*** Walsingham, 1900, *ibid.* **36** : 220, by original designation and monotypy.
Junior subjective synonym of *Oegoconia* Stainton, 1854 (Meyrick, 1925, *Genera Insect.* **184** : 200). Currently considered to be a valid genus (Amsel, 1940, *Veröff. dt. Kolon. u. Übersee-Mus. Bremen* **3** : 51).
A. mediopallidum Walsingham, 1900, is currently considered to be a junior subjective synonym of *Gelechia fasciata* Stainton, 1859, *Ann. Mag. nat. Hist.* (3)**3** : 213 (Meyrick, 1925, *Genera Insect.* **184** : 200).
Originally not placed in a family but associated with genera of Gelechiidae; subsequently transferred to the Symmocidae (Kasy, 1966, *in* Gozmány, *Z. wien. ent. Ges.* (51. Jg) **77** : 71).
See also: *Microgonia* Popescu-Gorj & Căpuşe, 1965.

APATETRIS Staudinger, 1879, *Horae Soc. ent. ross.* **15** : 316.
Type-species: ***Apatetris mirabella*** Staudinger, 1879, *ibid.* **15** : 317, by monotypy.
Correct date of publication (1879, November 1st) taken from 'Repartition des livraisons' issued with the 'Tables des matières' of volume **15.**

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[1] *A. heteractis* Meyrick, 1914 (October 8th), is currently considered to be a junior subjective synonym of *Beltheca picolella* Busck, 1914 (April 30th), the type-species of *Beltheca* Busck, 1914 (Meyrick, 1926, *Exot. Microlepidopt.* **3** : 270).

See also: *Anaphaula* Walsingham, 1904; *Calyptrotis* Meyrick, 1891; *Catatinagma* Rebel, 1903; *Cecidophaga* Walsingham, 1911; *Dactylota* Snellen, 1876; *Dactylotula* Cockerell, 1888; *Didactylota* Walsingham, 1892; *Epiphthora* Meyrick, 1888; *Proactica* Walsingham, 1904; *Stenopherna* Lower, 1901.

APETHISTIS Meyrick, 1908, *J. Bombay nat. Hist. Soc.* **18** : 459.

Type-species: ***Apethistis metoeca*** Meyrick, 1908, *ibid.* **18** : 460, by original designation. Currently considered to be a junior subjective synonym of *Brachmia* Hübner, [1825] (Meyrick, 1911, *J. Bombay nat. Hist. Soc.* **20** : 708).

APHANAULA Meyrick, 1895, *Handb. Br. Lepid.* : 579.

Type-species: [***Phalaena***] ***leucatella*** Clerck, 1759, *Icon. Insect. rariorum* **1**, pl. 11, fig. 3 [as ‡*leucattella*, incorrect original spelling]; 1864, *ibid.* **2**, Register : [2], by subsequent designation: Walsingham, 1910, *Biologia cent.-am.*, *Zool.*, Lepid.-Heterocera **4** : 44.

The type-species was included by Meyrick, as '*A. leucatella*, L.' and cited by Walsingham as '*Phalaena Tinea leucatella* Cl., L.'. Clerck, on pl. 11, spelt the name of the type-species ‡'*leucattella*', which he altered to '*leucatella*' in a later part of the same work. This latter spelling has been generally used and is here accepted as a justified emendation.

Junior objective synonym of *Telea* Stephens, 1834, nom. praeocc., for which it may be used as the objective replacement name. Currently considered to be a junior subjective synonym of *Recurvaria* Haworth, 1828 (Rebel, 1901, *in* Staudinger & Rebel, *Cat. Lepid. palaearctischen Faunengebietes* **2** : 155).

APHANOSTOLA Meyrick, 1931, *Exot. Microlepidopt.* **4** : 56.

Type-species: ***Aphanostola atripalpis*** Meyrick, 1931, *ibid.* **4** : 57, by original designation.

APHNOGENES Meyrick, 1921, *Ann. Transv. Mus.* **8** : 88.

Type-species: ***Aphnogenes zonaea*** Meyrick, 1921, *ibid.* **8** : 88, by monotypy.

****APILETRIA*** Lederer, 1855, *Verh. zool.-bot. Ver. Wien* **5** : 231.

Type-species: ***Apiletria luella*** Lederer, 1855, *ibid.* **5** : 231, pl. 4, fig. 13, by monotypy.

Originally described in the 'Tineina'; subsequently included in the Gelechi[i]dae (Wocke, 1861, *in* Staudinger & Wocke, *Cat. Lepid. Eur.* : 111); Gelechiidae: Oecophorinae [= Oecophoridae] (Rebel, 1901, *in* Staudinger & Rebel, *Cat. Lepid. palaearctischen Faunengebietes* **2** : 166); Gelechiidae: Symmocinae [= Symmocidae] (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 343); currently placed in the Symmocidae.

See also: *Aretascetis* Meyrick, 1936; *Xystoceros* Meyrick, 1914.

APOCRITICA Meyrick, 1925, *Genera Insect.* **184** : 7 [key], 64.

Type-species: ***Chaliniastis chromatica*** Meyrick, 1911, *Trans. Linn. Soc. Lond.* **14** : 272, by original designation and monotypy.

APODIA Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 286.

Type-species: ***Lita bifractella*** Duponchel, 1842, *in* Godart, *Hist. nat. Lépid. Papillons Fr.*, Suppl. **4** : 292, pl. 74, fig. 13, by monotypy.

According to Walsingham, 1897, *Proc. zool. Soc. Lond.* **1897** : 63, *Apodia* Heinemann, 1870, is preoccupied but this earlier usage of the name has not been found. Junior subjective synonym of *Aristotelia* Hübner, [1825] (Walsingham, 1907, *Fauna hawaii.* **1**(5) : 478); subgenus of *Aristotelia* Hübner, [1825] (Gaede, 1937, *Lepid. Cat.* **79** : 43); currently considered to be a valid genus. The type-species was included by Heinemann as '*bifractella* HS.' and has been erroneously attributed to Douglas, 1850, *Trans. ent. Soc. Lond.*, N.S. **1** : 66, by several authors.

‡*APONOEA* Walsingham, 1904, *Entomologist's mon. Mag.* **40** : 216 (nomen nudum).

Published without description or indication and associated species. Subsequently made nomenclaturally available by Walsingham, 1905, *ibid.* **41** : 125.

APONOEA Walsingham, 1905, *Entomologist's mon. Mag.* **41** : 125.

Type-species: ***Aponoea obtusipalpis*** Walsingham, 1905, *ibid.* **41** : 125, by original designation and monotypy.

See also: ‡*Aponoea* Walsingham, 1904.

APOPIRA Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 73.
Type-species: ***Gelechia falcatella*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 625, by original designation and monotypy.
Currently considered to be a junior subjective synonym of *Commatica* Meyrick, 1909 (Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 238).

‡*APOSOESTA* Turner, 1924, *Ark. Zool.* **16**(3) : 6.
Incorrect subsequent spelling of *Aprosoesta* Turner, 1919.

APOTACTIS Meyrick, 1918, *Ann. Transv. Mus.* **6** : 52.
Type-species: ***Apotactis drimylota*** Meyrick, 1918, *ibid.* **6** : 52, by monotypy.

APOTHETOECA Meyrick, 1922, *Nat. Hist. Juan Fernandez & Easter Is.* **3** : 268.
Type-species: ***Apothetoeca synaphrista*** Meyrick, 1922, *ibid.* **3** : 269, by monotypy.

APOTISTATUS Walsingham, 1904, *Entomologist's mon. Mag.* **40** : 216 [nomen nudum], 271.
Type-species: ***Apotistatus leucostictus*** Walsingham, 1904, *ibid.* **40** : 271, by original designation and monotypy.
On p. 216 (1904, September) without description or indication and associated species; made nomenclaturally available on p. 271 (1904, December).

APROAEREMA Durrant, 1897, *Entomologist's mon. Mag.* **33** : 221.
Type-species: [***Tinea***] ***anthyllidella*** Hübner, [1813], *Samml. eur. Schmett.* **8**, pl. 48, fig. 330, by original designation.
Senior objective synonym of *Schuetzeia* Spuler, 1910. Junior subjective synonym of *Anacampsis* Curtis, 1827 (Rebel, 1901, *in* Staudinger & Rebel, *Cat. Lepid. palaearctischen Faunengebietes* **2** : 153). Rebel's concept of the genus *Anacampsis* Curtis, 1827, is erroneous because none of the species he included are congeneric with the type-species [*Phalaena*] *populella* Clerck, 1759. Junior subjective synonym of *Stomopteryx* Heinemann, 1870 (Meyrick, 1925, *Genera Insect.* **184** : 111); currently considered to be a valid genus (Hering, 1952, *Opusc. ent.* **17** : 201).
See also: *Schuetzeia* Spuler, 1910.

****APROMINTA*** Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 332.
Type-species: ***Oecophora cryptogamarum*** Millière, 1872, *Petites Nouv. ent.* **4** : 172, by original designation.
Originally described in the Gelechiidae: Symmocinae; currently placed in the Symmocidae.
See also: *Parthenoptera* Gozmány, 1957.

****APROOPTA*** Turner, 1919, *Proc. R. Soc. Qd* **31** : 171.
Type-species: ***Aproopta melanchlaena*** Turner, 1919, *ibid.* **31** : 172, by monotypy.
Correct date of publication (1919, December 30th) taken from original wrapper.
Originally described in the Gelechianae [= Gelechiidae], subsequently included in the Glyphipterygidae [= Glyphipterigidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 20); here transferred to the Stenomidae (Common in litteris).

****APROSOESTA*** Turner, 1919, *Proc. R. Soc. Qd* **31** : 151.
Type-species: ***Aprosoesta pancala*** Turner, 1919, *ibid.* **31** : 151, by monotypy.
Correct date of publication (1919, December 30th) taken from original wrapper.
Currently considered to be a junior subjective synonym of *Crocanthes* Meyrick, 1886 (Meyrick, 1925, *Genera Insect.* **184** : 231), which automatically places *Aprosoesta* Turner, 1919 in the Lecithoceridae.
See also: ‡*Aposoesta* Turner, 1924.

ARAEOPHALLA Janse, 1960, *Moths S. Afr.* **6** : 205.
Type-species: ***Araeophalla barbertonensis*** Janse, 1960, *ibid.* **6** : 206, figs, by original designation and monotypy.

ARAEOPHYLLA Janse, 1954, *Moths S. Afr.* **5** : 349.
Type-species: ***Lecithocera spiladias*** Meyrick, 1921, *Ann. Transv. Mus.* **8** : 88, by original designation and monotypy.

ARAEOVALVA Janse, 1960, *Moths S. Afr.* **6** : 208 (objective replacement name for *Stenovalva* Janse, 1958, nom. praeocc.).

Type-species: ***Gelechia albiflora*** Meyrick, 1920, *Ann. S. Afr. Mus.* **17** : 283, by original designation for and monotypy of *Stenovalva* Janse, 1958.

*‡*ARAGONIA* Agenjo, 1968, *Graellsia* **23** [Cat. ordenador Lepid. España] Gelechiidae : [9]. Incorrect subsequent spelling of *Arragonia* Amsel, 1942 (Holcopogonidae).

‡*ARATROGNATHOSIA* Gozmány, 1968, *Folia ent. hung.*, S.N. **21** : 261 (nomen nudum).

‡*Aratrognathosia* fails to satisfy the conditions of the *Int. Code zool. Nom.*, Article 13 (a), and therefore is a nomen nudum. The name was published in association with *vilella* Zeller. *Gelechia vilella* Zeller, 1847, is the type-species of *Platyedra* Meyrick, 1895, and a junior subjective synonym of *Recurvaria subcinerea* Haworth, 1828.

ARCHIMETZNERIA Amsel, 1936, *Veröff. dt. Kolon. u. Übersee-Mus. Bremen* **1** : 355.

Type-species: ***Archimetzneria santolinella*** Amsel, 1936, *ibid.* **1** : 355, figs, by monotypy.

Currently considered to be a junior subjective synonym of *Metzneria* Zeller, 1839 (Sattler, 1971, *Entomologist's Gaz.* **22** : 103).

ARDOZYGA Lower, 1902, *Trans. R. Soc. S. Aust.* **26** : 244.

Type-species: ***Ardozyga tetralychna*** Lower, 1902, *ibid.* **26** : 244, by subsequent designation: Meyrick, 1922, *Genera Insect.* **180** : 41.

Originally described in the Oecophoridae. Currently considered to be a junior subjective synonym of *Protolechia* Meyrick, 1903 (Turner, 1933, *Proc. Linn. Soc. N.S.W.* **58** : 83), which automatically places *Ardozyga* Lower, 1902, in the Gelechiidae.

AREGHA Chrétien, 1915, *Annls Soc. ent. Fr.* **84** : 333.

Type-species: ***Aregha abhaustella*** Chrétien, 1915, *ibid.* **84** : 334, fig. 6, by monotypy.

****ARETASCETIS*** Meyrick, 1936, *Exot. Microlepidopt.* **5** : 47.

Type-species: ***Aretascetis endopercna*** Meyrick, 1936, *ibid.* **5** : 47, by monotypy.

Currently considered to be a junior subjective synonym of *Apiletria* Lederer, 1855, (Amsel, 1940, *Veröff. dt. Kolon. u. Übersee-Mus. Bremen* **3** : 52).

Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Oecophoridae (Amsel, 1949, *Bull. Soc. Fouad I. Ent.* **33** : 320); currently placed in the Symmocidae (Gozmány, 1965, *Acta zool. hung.* **11** : 106).

ARGOLAMPROTES Benander, 1945, *Ent. Tidskr.* **66** : 126, 128 [key], 135.

Type-species: ***Tinea micella*** [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend* : 140, by monotypy.

See also: ‡*Agrolamprotes* Popescu-Gorj & Nemeș, 1965.

ARGOPHARA Janse, 1963, *Moths S. Afr.* **6** : 247, 268 [key].

Type-species: ***Argophara epaxia*** Janse, 1963, *ibid.* **6** : 248, figs, by original designation and monotypy.

ARGYRITIS Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 283 (nom. praeocc.).

Type-species: *Gelechia* (*Brachmia*) *pictella* Zeller, 1839, *Isis, Leipzig* **1839** : 202, by subsequent designation: Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 21.

Argyritis Heinemann, 1870, is a junior homonym of *Argyritis* Hübner, [1821] (Lepidoptera: Noctuidae). Junior subjective synonym of *Ergatis* Heinemann, 1870 (Snellen, 1882, *Vlinders Nederl.*, Microlepid. : 681); *Aristotelia* Hübner, [1825] (Walsingham, 1907, *Fauna hawaii.* **1**(5) : 478); *Xystophora* Wocke, [1876] (Gozmány, 1958, *Fauna Hung.* **40** : 258). Heslop, 1961, *Entomologist's Gaz.* **12** : 205, included *Tinea atrella* [Denis & Schiffermüller], 1775, the type-species of *Lamprotes* Heinemann, 1870, in *Argyritis* Heinemann, 1870, thereby automatically synonymizing both genera. *Eulamprotes* Bradley, 1971, proposed as the objective replacement name for *Lamprotes* Heinemann, 1870, nom. praeocc., is here used as the subjective replacement name for *Argyritis* Heinemann, 1870, nom. praeocc. *G. pictella* Zeller, 1839, is here considered to be a junior subjective synonym of *Phalaena* (*Tinea*) *wilkella* Linnaeus, 1758, *Syst. Nat.* (ed. 10) **1** : 541, **syn. n.**

ARGYROLACIA Keifer, 1936, *Mon. Bull. Calif. Dep. Agric.* **25** : 243.

Type-species: **Argyrolacia bifida** Keifer, 1936, *ibid.* **25** : 243, pl. 4, figs 1 a-f, by original designation and monotypy.

ARISTOTELIA Hübner, [1825], *Verz. bekannter Schmett.* : 424.

Type-species: [***Tinea***] **decurtella** Hübner, [1813], *Samml. eur. Schmett.* **8**, pl. 45, fig. 311, by monotypy.

Correct date of publication ([1825]) taken from Opinion 150, *Opin. Decl. int. Commn zool. Nom.* **2** : 166 (1943).

See also: *Anaphaula* Walsingham, 1904; *Apodia* Heinemann, 1870; *Argyritis* Heinemann, 1870; *Chrysoesthia* Hübner, [1825]; *Chrysopora* Clemens, 1860; *Doryphora* Heinemann, 1870; *Doryphorella* Cockerell, 1888; *Enchrysa* Zeller, 1873; *Ergatis* Heinemann, 1870; *Eucatoptus* Walsingham, 1897; *Evagora* Clemens, 1860; *Isochasta* Meyrick, 1886; *Lamprotes* Heinemann, 1870; *Microsetia* Stephens, 1829; *Monochroa* Heinemann, 1870; *Nannodia* Heinemann, 1870; *Nomia* Clemens, 1860; *Parapodia* Joannis, 1912; *Ptocheuusa* Heinemann, 1870; *Syneunetis* Wallengren, 1881; *Xystophora* Wocke, [1876].

ARLA Clarke, 1942, *Proc. U.S. natn. Mus.* **92** : 269.

Type-species: **Arla tenuicornis** Clarke, 1942, *ibid.* **92** : 269, figs, by original designation and monotypy.

AROGA Busck, 1914, *Proc. U.S. natn. Mus.* **47** : 13.

Type-species: **Gelechia paraplutella** Busck, 1910, *Proc. ent. Soc. Wash.* **11** : 181, by original designation and monotypy.

Junior subjective synonym of *Gelechia* Hübner, [1825] (Gaede, 1937, *Lepid. Cat.* **79** : 144). Currently considered to be a valid genus (Busck, 1939, *Proc. U.S. natn. Mus.* **86** : 578).

See also: ‡*Aruga* Janse, 1958.

AROGALEA Walsingham, 1910, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 48.

Type-species: **Gelechia cristifasciella** Chambers, 1878, *Bull. U.S. geol. geogr. Surv. Territ.* **4** : 87, by original designation.

AROTRIA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 258 [key], 387.

Type-species: **Arotria iophaea** Meyrick, 1904, *ibid.* **29** : 387, by monotypy.

AROTROMIMA Meyrick, 1929, *Exot. Microlepidopt.* **3** : 532.

Type-species: **Arotromima politica** Meyrick, 1929, *ibid.* **3** : 532, by monotypy.

****ARRAGONIA*** Amsel, 1942, *Veröff. dt. Kolon. u. Übersee-Mus. Bremen* **3** : 229.

Type-species: **Holcopogon punctivittellus** Zerny, 1927, *Eos, Madr.* **3** : 477, by original designation.

Originally described in the Scythrididae; subsequently transferred to the Holcopogonidae (Gozmány, 1967, *Acta zool. hung.* **13** : 273).

See also: ‡*Aragonia* Agenjo, 1968.

‡*ARUGA* Janse, 1958, *Moths S. Afr.* **6** : 69.

Incorrect subsequent spelling of *Aroga* Busck, 1914.

‡*ASAPHARCA* Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 18, 19.

Incorrect subsequent spelling of *Asapharcha* Meyrick, 1920.

ASAPHARCHA Meyrick, 1920, *Ann. S. Afr. Mus.* **17** : 292.

Type-species: **Asapharcha strigifera** Meyrick, 1920, *ibid.* **17** : 292, by monotypy.

Originally described in the Xyloryctidae; here transferred to the Gelechiidae.

See also: ‡*Asapharca* Clarke, 1955.

****ASARISTA*** Meyrick, 1935, *Exot. Microlepidopt.* **4** : 591.

Type-species: **Asarista homalodoxa** Meyrick, 1935, *ibid.* **4** : 591, by monotypy.

Currently considered to be a junior subjective synonym of *Symmoca* Hübner, [1825] (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 326, 327). *A. homalodoxa* Meyrick, 1935, is currently considered to be a junior subjective synonym of *Ceuthomadarus rifellus* Zerny, 1932, *Z. öst. EntVer.* **17** : 42 (Gozmány, 1961, *Acta zool. hung.* **7** : 108).

Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the

Gelechiidae: Symmocinae [= Symmocidae] (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 326, 327).

ASBOLISTIS Meyrick, 1936, *Exot. Microlepidopt.* **5** : 48.

Type-species: ***Asbolistis chthoniopa*** Meyrick, 1936, *ibid.* **5** : 49, by monotypy.

Currently considered to be a junior subjective synonym of *Ceuthomadarus* Mann, 1864 (Gozmány, 1961, *Acta zool. hung.* **7** : 108).

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Gozmány, 1961, *ibid.* **7** : 108).

See also: *Exorgana* Gozmány, 1957.

ASMENISTIS Meyrick, 1925, *Genera Insect.* **184** : 12 [key], 241.

Type-species: ***Lecithocera cucullata*** Meyrick, 1914, *Exot. Microlepidopt.* **1** : 199, by original designation and monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1965, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **5** : 7).

ASPASIODES Janse, 1958, *Moths S. Afr.* **6** : 35 (nom. praeocc.).

Type-species: *Gelechia hutchinsonella* Walsingham, 1891, *Trans. ent. Soc. Lond.* **1891** : 93, pl. 4, fig. 30, by original designation and monotypy.

Aspasiodes Janse, 1958, is a junior homonym of *Aspasiodes* Turner, 1944 (Lepidoptera: Oecophoridae). No replacement name is currently available.

ATASTHALISTIS Meyrick, 1886, *Trans. ent. Soc. Lond.* **1886** : 279.

Type-species: ***Atasthalistis pyrocosma*** Meyrick, 1886, *ibid.* **1886** : 280, by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 136.

See also: *Croesopola* Meyrick, 1904.

ATHRINACIA Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 104.

Type-species: ***Athrinacia xanthographa*** Walsingham, 1911, *ibid.* **4** : 105, fig. 21, pl. 3, fig. 27, by original designation.

ATHYMORIS Meyrick, 1935, *Exot. Microlepidopt.* **4** : 564.

Type-species: ***Athymoris martialis*** Meyrick, 1935, *ibid.* **4** : 564, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

ATOPONEURA Busck, 1914, *Proc. U.S. natn. Mus.* **47** : 4 (nom. praeocc.).

Type-species: *Atoponeura violacea* Busck, 1914, *ibid.* **47** : 4, by original designation and monotypy.

Atoponeura Busck, 1914, is a junior homonym of *Atoponeura* Szépligeti, 1905 (Hymenoptera); currently considered to be a senior subjective synonym of *Eunomarcha* Meyrick, 1923 (Meyrick, 1926, *Exot. Microlepidopt.* **3** : 270), which is here used as the subjective replacement name for *Atoponeura* Busck, 1914, nom. praeocc. *A. violacea* Busck, 1914, is currently considered to be a senior subjective synonym of *Eunomarcha glycinopis* Meyrick, 1923, the type-species of *Eunomarcha* Meyrick, 1923 (Meyrick, 1926, *Exot. Microlepidopt.* **3** : 270).

ATREMAEA Staudinger, 1871, *Berl. ent. Z.* **14** : 317.

Type-species: ***Atremaea lonchoptera*** Staudinger, 1871, *ibid.* **14** : 317, 318, by monotypy.

Correct date of publication (1871, January, begin.) taken from distribution list, *ibid.* **14** : iii, footnote.

Originally not placed in a family; subsequently included in the Gelechi[i]dae (Wocke, 1871, *in* Staudinger & Wocke, *Cat. Lepid. eur. Faunengebiets* : 303); currently placed in the Xyloryctidae (Lhomme, [1949], *Cat. Lépid. Fr. Belg.* **2** : 784).

ATRICHOZANCLA Janse, 1954, *Moths S. Afr.* **5** : 368.

Type-species: ***Eridachtha phaeocrossis*** Meyrick, 1937, *Exot. Microlepidopt.* **5** : 96, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 345).

AULACOMIMA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 256 [key], 395.

Type-species: ***Aulacomima trinervis*** Meyrick, 1904, *ibid.* **29** : 395, by monotypy.

Currently considered to be a junior subjective synonym of *Brachmia* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 248).

AULIDIOTIS Meyrick, 1925, *Genera Insect.* **184** : 6 [key], 182.

Type-species: ***Ceratophora phoxopterella*** Snellen, 1903, *Tijdschr. Ent.* **46** : 41, pl. 4, figs 11, 12, by original designation and monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20); currently placed in the Gelechiidae (Clarke, 1969, *ibid.* **6** : 321).

AUTODECTIS Meyrick, 1937, *Exot. Microlepidopt.* **5** : 90.

Type-species: ***Autodectis atelarga*** Meyrick, 1937, *ibid.* **5** : 90, by monotypy.

AUTOMOLA Meyrick, 1883, *Entomologist's mon. Mag.* **20** : 34 (nom. praeocc.).

Type-species: *Automola pelodes* Meyrick, 1883, *ibid.* **20** : 34, by monotypy.

Automola Meyrick, 1883, is a junior homonym of *Automola* Loew, 1873 (Diptera); *Autosticha* Meyrick, 1886, was proposed as the objective replacement name.

AUTONEDA Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 496 (objective replacement name for *Neda* Chambers, 1874, nom. praeocc.).

Type-species: ***Neda plutella*** Chambers, 1874, *Can. Ent.* **6** : 244, by monotypy of *Neda* Chambers, 1874.

Correct date of publicatoin (1903, January 13th) taken from Clarke, 1950, *Proc. ent. Soc. Wash.* **52** : 308.

Currently considered to be a junior subjective synonym of *Megacraspedus* Zeller, 1839 (Walsingham, 1909, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 21).

AUTOSTICHA Meyrick, 1886, *Trans. ent. Soc. Lond.* **1886** : 281 (objective replacement name for *Automola* Meyrick, 1883, nom. praeocc.).

Type-species: ***Automola pelodes*** Meyrick, 1883, *Entomologist's mon. Mag.* **20** : 34, by monotypy of *Automola* Meyrick, 1883.

See also: *Epicharma* Walsingham, 1897; *Epicoenia* Meyrick, 1906; *Prosomura* Turner, 1919.

AXYROSTOLA Meyrick, 1923, *Exot. Microlepidopt.* **3** : 29.

Type-species: ***Axyrostola acherusia*** Meyrick, 1923, *ibid.* **3** : 29, by monotypy.

BACTROLOPHA Lower, 1901, *Trans. R. Soc. S. Aust.* **25** : 79.

Type-species: ***Bactrolopha orthodesma*** Lower, 1901, *ibid.* **25** : 79, by monotypy.

Currently considered to be a junior subjective synonym of *Dorycnopa* Lower, 1901 (Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 269).

BACTROPALTIS Meyrick, 1939, *Trans. R. ent. Soc. Lond.* **89** : 56.

Type-species: ***Bactropaltis lithosema*** Meyrick, 1939, *ibid.* **89** : 56, by original designation and monotypy.

BAGDADIA Amsel, 1949, *Bull. Soc. Fouad I. Ent.* **33** : 321.

Type-species: ***Bagdadia irakella*** Amsel, 1949, *ibid.* **33** : 322, figs, by original designation and monotypy.

Originally described in the Scythri[d]idae; here transferred to the Gelechiidae.

BARTICEJA Povolný, 1967, *Acta ent. Mus. natn. Pragae* **37** : 104.

Type-species: ***Phthorimaea epitricha*** Meyrick, 1917, *Trans. ent. Soc. Lond.* **1917** : 47, by monotypy.

BARYZANCLA Turner, 1933, *Proc. Linn. Soc. N.S.W.* **58** : 80.

Type-species: **Baryzancla dysclyta** Turner, 1933, *ibid.* **58** : 81, by original designation.

Originally described in the Oecophoridae; here transferred to the Gelechiidae (Common in litteris).

BATENIA Chrétien, 1908, *Bull. Soc. ent. Fr.* **1908** : 57.

Type-species: ***Batenia fasciella*** Chrétien, 1908, *ibid.* **1908** : 58, by monotypy.

BATTARISTIS Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 245.
Type-species: ***Battaristis ichnota*** Meyrick, 1914, *ibid.* **1914** : 247, by original designation.
See also: *Duvita* Busck, 1916.

BEGOE Chambers, 1872, *Can. Ent.* **4** : 209.
Type-species: ***Begoe costolutella*** Chambers, 1872, *ibid.* **4** : 209, by monotypy.
Junior subjective synonym of *Trichotaphe* Clemens, 1860 (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 505); currently considered to be a junior subjective synonym of *Dichomeris* Hübner, 1818 (Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 87). *B. costolutella* Chambers, 1872, is currently considered to be a junior subjective synonym of *Trichotaphe setosella* Clemens, 1860, the type-species of *Trichotaphe* Clemens, 1860 (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 506).

BELOVALVA Janse, 1963, *Moths S. Afr.* **6** : 252, 280 [key].
Type-species: ***Belovalva nigripuncta*** Janse, 1963, *ibid.* **6** : 253, figs, by original designation and monotypy.

BELTHECA Busck, 1914 (April 30th), *Proc. U.S. natn. Mus.* **47** : 4.
Type-species: ***Beltheca picolella*** Busck, 1914, *ibid.* **47** : 5, by original designation and monotypy.
See also: *Anterethista* Meyrick, 1914 (October 8th).

BESCIVA Busck, 1914, *Proc. U.S. natn. Mus.* **47** : 5.
Type-species: ***Besciva longitudinella*** Busck, 1914, *ibid.* **47** : 6, by original designation and monotypy.

BILOBA Janse, 1954, *Moths S. Afr.* **5** : 301 (nom. praeocc.).
Type-species: *Gelechia* (*Brachmia*) *subsecivella* Zeller, 1852, *Lepid. Microptera quae J. A. Wahlberg in Caffrorum Terra collegit* : 113, by original designation.
Biloba Janse, 1954, is a junior homonym of *Biloba* Stach, 1951 [1949, nomen nudum] (Collembola). No replacement name is currently available.

BLASTOVALVA Janse, 1960, *Moths S. Afr.* **6** : 178.
Type-species: ***Thiotricha paltobola*** Meyrick, 1921, *Ann. Transv. Mus.* **8** : 75, by original designation.

‡*BRACHIACMA* Common, 1970, *Insects Aust.* : 825.
Incorrect subsequent spelling of *Brachyacma* Meyrick, 1886.

‡*BRACHICROSSATA* Hartmann, 1880, *Mitt. münch. ent. Ver.* **4** : 25.
Incorrect subsequent spelling of *Brachycrossata* Heinemann, 1870.

BRACHMIA Hübner, [1825], *Verz. bekannter Schmett.* : 419.
Type-species: ***Tinea dimidiella*** [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend* : 141, by subsequent designation: Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 84.
Correct date of publication ([1825]) taken from Opinion 150, *Opin. Decl. int. Commn zool. Nom.* **2** : 166 (1943).
Originally described in the 'Elasmiae'; subsequently included in the Gelechiadae [= Gelechiidae] (Meyrick, 1895, *Handb. Br. Lepid.* : 605); Gelechiidae: Lecithocerinae (Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 153); currently placed in the Gelechiidae: Brachmiinae.
See also: *Apethistis* Meyrick, 1908; *Aulacomima* Meyrick, 1904; ‡*Braclunia* Stephens, 1834; *Ceratophora* Heinemann, 1870; *Cladodes* Heinemann, 1870; *Eudodacles* Snellen, 1889.

BRACHYACMA Meyrick, 1886, *Trans. ent. Soc. Lond.* **1886** : 278.
Type-species: ***Brachyacma epiochra*** Meyrick, 1886, *ibid.* **1886** : 279, by monotypy.
See also: ‡*Brachiacma* Common, 1970; ‡*Brachyaema* Povolný, 1964; *Lathontogenus* Walsingham, 1897; *Lipatia* Busck, 1910; *Paraspistes* Meyrick, 1905.

‡*BRACHYAEMA* Povolný, 1964, *Dt. ent. Z.*, N.F. **11** : 431.
Incorrect subsequent spelling of *Brachyacma* Meyrick, 1886.

BRACHYCROSSATA Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 323.
Type-species: [*Phalaena*] *cinerella* Clerck, 1759, *Icon. Insect. variorum* **1**, pl. 11, fig. 6, by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 141.
The type-species was included by Heinemann as '*cinerella* L.'.
Junior objective synonym of *Acompsia* Hübner, [1825]. Junior subjective synonym of *Ceratophora* Heinemann, 1870 (Snellen, 1882, *Vlinders Nederl.*, Microlepid. : 613).
See also: ‡*Brachicrossata* Hartmann, 1880.

****BRACHYERGA*** Meyrick, 1925, *Genera Insect.* **184** : 4 [key], 235.
Type-species: ***Lecithocera hemiacma*** Meyrick, 1910, *Trans. ent. Soc. Lond.* **1910** : 448, by original designation and monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

BRACHYPSALTIS Meyrick, 1931, *Exot. Microlepidopt.* **4** : 58.
Type-species: ***Brachypsaltis subalbata*** Meyrick, 1931, *ibid.* **4** : 58, by monotypy.

BRACHYZANCLA Turner, 1947, *Proc. Linn. Soc. N.S.W.* **72** : 154.
Type-species: ***Brachyzancla poenicea*** Turner, 1947, *ibid.* **72** : 154, by original designation.
Originally described in the Oecophoridae; here transferred to the Gelechiidae (Common in litteris).

‡*BRACLUNIA* Stephens, 1834, *Ill. Br. Ent.*, Haustellata **4** : 205; 1835, *ibid.* **4** : 422.
Incorrect subsequent spelling of *Brachmia* Hübner, [1825].

BROCHOMETIS Meyrick, 1923, *Exot. Microlepidopt.* **2** : 625.
Type-species: ***Dichomeris plexigramma*** Meyrick, 1922, *Trans. ent. Soc. Lond.* **1922** : 110, by original designation and monotypy.
Currently considered to be a junior subjective synonym of *Dichomeris* Hübner, 1818 (Diakonoff, 1941, *Treubia* **18** : 198).

BRUCHIANA Jörgensen, 1916, *Physis B. Aires* **2** : 363.
Type-species: ***Bruchiana cassiaella*** Jörgensen, 1916, *ibid.* **2** : 363, fig. 1, by monotypy.
Bruchiana Jörgensen, 1916, has been erroneously attributed to Kieffer & Jörgensen, 1910, by Lima, 1945, *Insetos Brasil* **5** : 274.
Originally not placed in a family; subsequently included in the Gelechiidae (Lima, 1945, *ibid.* **5** : 274).

‡*BRYOTHROPHA* Vorbrodt, 1931, *Dt. ent. Z. Iris* **45** : 136.
Incorrect subsequent spelling of *Bryotropha* Heinemann, 1870.

‡*BRYOTROCHA* Kirby, 1881, *Zool. Rec.* (1879) **16** (Insecta) : 188.
Incorrect subsequent spelling of *Bryotropha* Heinemann, 1870.

BRYOTROPHA Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 233.
Type-species: ***Tinea terrella*** [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend* : 140, by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 73.
The type-species was included by Heinemann as '*terrella* V.'. *T. terrella* has been erroneously attributed to Hübner, 1796, *Samml. eur. Schmett.* **8** : 42, pl. 25, fig. 170, by several authors.
Junior subjective synonym of *Gelechia* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 73); subgenus of *Gelechia* Hübner, [1825] (Snellen, 1882, *Vlinders Nederl.*, Microlepid. : 643); currently considered to be a valid genus.
See also: *Adelphotropha* Gozmány, 1955; ‡*Bryothropha* Vorbrodt, 1931; ‡*Bryotrocha* Kirby, 1881; *Mniophaga* Pierce & Daltry, 1938.

****BUBULCELLODES*** Amsel, 1942, *Veröff. dt. Kolon. u. Übersee-Mus. Bremen* **3** : 230.
Type-species: ***Hapsifera parcella*** Lederer, 1855, *Verh. zool.-bot. Ver. Wien* **5** : 228, pl. 4, fig. 12, by original designation.
Currently considered to be a junior subjective synonym of *Charadraula* Meyrick, 1931

(Gozmány, 1967, *Acta zool. hung.* **13** : 275). *H. parcella* Lederer, 1855, is currently considered to be a senior subjective synonym of *Charadraula chersopsamma* Meyrick, 1931, the type-species of *Charadraula* Meyrick, 1931 (Gozmány, 1967, *ibid.* **13** : 275).

Originally described in the Scythrididae; subsequently transferred to the Holcopogonidae (Gozmány, 1967, *ibid.* **13** : 275).

BUCOLARCHA Meyrick, 1929, *Exot. Microlepidopt.* **3** : 515.

Type-species: ***Bucolarcha geodes*** Meyrick, 1929, *ibid.* **3** : 515, by monotypy.

CACELICE Busck, 1902, *Jl N.Y. ent. Soc.* **10** : 93.

Type-species: ***Cacelice permolestella*** Busck, 1902, *ibid.* **10** : 93, pl. 12, fig. 2, by original designation and monotypy.

Junior subjective synonym of *Helice* Chambers, 1873, nom. praeocc. (Braun, 1919, *Can. Ent.* **51** : 203); currently considered to be a junior subjective synonym of *Theisoa* Chambers, 1874 (Busck, 1909, *Proc. ent. Soc. Wash.* **11** : 94). *C. permolestella* Busck, 1902, is currently considered to be a junior subjective synonym of *Helice pallidochrella* Chambers, 1873, the type-species of *Helice* Chambers, 1873, nom. praeocc. (Braun, 1919, *Can. Ent.* **51** : 203).

Originally described in the Elachistidae; subsequently transferred to the Gelechiid[ae] (Braun, 1919, *Can. Ent.* **51** : 203).

*****CACOGAMIA*** Snellen, 1903, *Tijdschr. Ent.* **46** : 48.

Type-species: ***Cacogamia elegans*** Snellen, 1903, *ibid.* **46** : 49, pl. 5, figs 10–12, by monotypy.

As *Cacogamia* ? *luteella* Snellen, 1903, *ibid.* **46** : 50, pl. 5, figs 13, 14, was doubtfully included in *Cacogamia*, *C. elegans* Snellen, 1903, is the type-species by monotypy (*Int. Code zool. Nom.*, Article 68 (c)).

Currently considered to be a junior subjective synonym of *Tisis* Walker, 1864 (Meyrick, 1910, *Trans. ent. Soc. Lond.* **1910** : 437) which automatically places *Cacogamia* Snellen, 1903, in the Lecithoceridae.

CALAMOTYPA Meyrick, 1926, *Exot. Microlepidopt.* **3** : 272.

Type-species: ***Calamotypa exstans*** Meyrick, 1926, *ibid.* **3** : 272, by monotypy.

CALLIPHYLLA Janse, 1963, *Moths S. Afr.* **6** : 243, 265 [key].

Type-species: ***Calliphylla retusa*** Janse, 1963, *ibid.* **6** : 244, figs, by original designation and monotypy.

CALLIPRORA Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 242.

Type-species: ***Calliprora pentagramma*** Meyrick, 1914, *ibid.* **1914** : 243, by original designation.

CALYPTROTIS Meyrick, 1891, *Entomologist's mon. Mag.* **27** : 56.

Type-species: ***Calyptrotis alphitodes*** Meyrick, 1891, *ibid.* **27** : 56, by monotypy.

Currently considered to be a junior subjective synonym of *Apatetris* Staudinger, 1879 (Meyrick, 1918, *Exot. Microlepidopt.* **2** : 117).

CANTHONISTIS Meyrick, 1922, *Zool. Meded. Leiden* **7** : 82.

Type-species: ***Canthonistis amphicarpa*** Meyrick, 1922, *ibid.* **7** : 82, by monotypy.

CAPNOSEMA Janse, 1958, *Moths S. Afr.* **6** : 121.

Type-species: ***Capnosema celidota*** Janse, 1958, *ibid.* **6** : 122, figs, by original designation.

CARBATINA Meyrick, 1913, *J. Bombay nat. Hist. Soc.* **22** : 181.

Type-species: ***Carbatina picrocarpa*** Meyrick, 1913, *ibid.* **22** : 182, by original designation.

CARNA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **30** : 1038 (nom. praeocc.) (objective replacement name for *Rhobonda* Walker, 1864, nom. praeocc.).

Type-species: *Rhobonda punctatella* Walker, 1864, *ibid.* **29** : 802, by monotypy of *Rhobonda* Walker, 1864.

Carna Walker, 1864, is a junior homonym of *Carna* Gistel, 1848 (Echinodermata). Junior subjective synonym of *Anorthosia* Clemens, 1860 (Walsingham, 1911, *Biologia cent.-am.*, *Zool.*, Lepid.-Heterocera **4** : 86); currently considered to be a junior subjective synonym of *Dichomeris* Hübner, 1818 (Meyrick, 1925, *Genera Insect.* **184** : 174).

****CARODISTA*** Meyrick, 1925, *Genera Insect.* **184** : 10 [key], 224.

Type-species: ***Homaloxestis flagitiosa*** Meyrick, 1914, *Exot. Microlepidopt.* **1** : 198, by original designation and monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

CARPATOLECHIA Căpuşe, 1964, *Ent. Tidskr.* **85** : 12.

Type-species: ***Carpatolechia dumitrescui*** Căpuşe, 1964, *ibid.* **85** : 13, figs 1–4, by original designation and monotypy.

C. dumitrescui Căpuşe, 1964, is currently considered to be a junior subjective synonym of *Tinea decorella* Haworth, 1812, *Trans. ent. Soc. Lond.* **1** : 338, **syn. n.**

CARTERICA Meyrick, 1925, *Genera Insect.* **184** : 10 [key], 223 (nom. praeocc.).

Type-species: *Homaloxestis phthoneropa* Meyrick, 1922, *Exot. Microlepidopt.* **2** : 505, by original designation and monotypy.

Carterica Meyrick, 1925, is a junior homonym of *Carterica* Thomson, 1860 (Coleoptera); *Cartericella* Fletcher, 1940, was proposed as the objective replacement name. ‡*Carterica* Dejean, 1835 (Coleoptera), was not accompanied by a description or indication, the included nominal species is a nomen nudum. ‡*Carterica* Dejean, 1835, thus is a nomen nudum and therefore invalid and unavailable for purposes of homonymy.

CARTERICELLA Fletcher, 1940, *Entomologist's Rec. J. Var.* **52** : 17 (objective replacement name for *Carterica* Meyrick, 1925, nom. praeocc.).

Type-species: ***Homaloxestis phthoneropa*** Meyrick, 1922, *Exot. Microlepidopt.* **2** : 505, by original designation for and monotypy of *Carterica* Meyrick, 1925.

‡*CARYCOLUM* Klimesch, 1954, *Z. wien. ent. Ges.* (39. Jg) **65** : 360.

Incorrect subsequent spelling of *Caryocolum* Gregor & Povolný, 1954.

CARYOCOLUM Gregor & Povolný, 1954, *Zool. ent. Listy* **3** : 87.

Type-species: ***Gelechia leucomelanella*** Zeller, 1839, *Isis, Leipzig* **1839** : 198, by original designation.

Originally proposed as a subgenus of *Gnorimoschema* Busck, 1900; currently considered to be a valid genus (Gozmány, 1958, *Fauna Hung.* **40** : 198).

See also: ‡*Carycolum* Klimesch, 1954; ‡*Caryoculum* Gozmány, 1955.

‡*CARYOCULUM* Gozmány, 1955, *Annls hist.-nat. Mus. natn. hung.*, S.N. **6** : 314.

Incorrect subsequent spelling of *Caryocolum* Gregor & Povolný, 1954.

CATABRACHMIA Rebel, 1909, *in* Rothschild, *Rovart. Lap.* **16** : 143.

Type-species: ***Catabrachmia csornensis*** Rebel, 1909, *ibid.* **16** : 145, by subsequent designation: Gaede, 1937, *Lepid. Cat.* **79** : 547.

Incorrect type-species: *Catabrachmia rozsikella* Rebel, 1909, *in* Rothschild, *Rovart. Lap.* **16** : 144, fig., designated by Amsel, 1958, *Z. wien. ent. Ges.* (43. Jg) **69** : 286. From Rebel's note preceding the description of *Catabrachmia* it is quite clear that he intended the genus for *rozsikella* as the type-species. However, his statement does not fulfil the requirements of the *Int. Code zool. Nom.*, Article 68 (a) and therefore technically does not constitute a type-designation.

Based on the incorrect type-species, *Catabrachmia* Rebel, 1909, has been placed as a junior subjective synonym of *Monochroa* Heinemann, 1870 (Sattler, 1971, *Entomologist's Gaz.* **22** : 103). As *C. csornensis* and *C. rozsikella* are currently considered to be congeneric, that position remains unchanged. *C. csornensis* Rebel, 1909, is currently considered to be a junior subjective synonym of *Gelechia divisella* Douglas, 1850, *Trans. ent. Soc. Lond.*, N.S. **1** : 60 (Sattler, 1971, *ibid.* **22** : 106). *C. rozsikella* Rebel, 1909, is currently considered to be a junior subjective synonym of *Ypsolophus palustrellus* Douglas, 1850, *Proc. ent. Soc. Lond.* **1850** :14 (Amsel, 1958, *Z. wien. ent. Ges.* (43. Jg) **69** : 286).

CATALEXIS Walsingham, 1909, *Biologia cent.-am.*, *Zool.*, Lepid.-Heterocera **4** : 19.
Type-species: ***Catalexis tapinota*** Walsingham, 1909, *ibid.* **4** : 20, fig. 5, pl. 1, fig. 18, by original designation and monotypy.

CATAMECES Turner, 1919, *Proc. R. Soc. Qd* **31** : 122.
Type-species: ***Catameces thiophara*** Turner, 1919, *ibid.* **31** : 122, by monotypy.
Correct date of publication (1919, December 30th) taken from original wrapper.

CATAMEMPSIS* Walsingham, 1907, *Fauna hawaii.* **1(5) : 491.
Type-species: ***Catamempsis decipiens*** Walsingham, 1907, *ibid.* **1**(5) : 491, pl. 14, fig. 6, by original designation and monotypy.
Currently considered to be a junior subjective synonym of *Thyrocopa* Meyrick, 1883 (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 41, 222).
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Cryptophasidae [= Xyloryctidae] (Fletcher, 1929, *ibid.* **11** : 41, 222). Erroneously placed in the Gelechiid[ae] by Swezey, 1936, *Proc. Hawaii. ent. Soc.* **9** : 191.

CATASPHALMA* Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8 : 334.
Type-species: ***Symmoca kautziella*** Rebel, 1935, *Z. öst. EntVer.* **20** : 27, by original designation and monotypy.
Originally described in the Gelechiidae: Symmocinae; currently placed in the Symmocidae.

CATASTEGA* Clemens, 1861, *Proc. ent. Soc. Philad.* **1 : 86.
Type-species: ***Catastega timidella*** Clemens, 1861, *ibid.* **1** : 87, by subsequent designation: Busck, 1903, *Proc. U.S. natn. Mus.* **25** : 852.
Originally described in the '? Tineina, ? Phycites'; erroneously included in the Gelechiidae as a junior subjective synonym of *Gelechia* Hübner, [1825] (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 511); currently placed in the Tortricidae (Dyar, [1903], *ibid.* **52** : 511, footnote).

CATATINAGMA Rebel, 1903, *Verh. zool.-bot. Ges. Wien* **53** : 94.
Type-species: ***Catatinagma trivittellum*** Rebel, 1903, *ibid.* **53** : 94, fig., by monotypy.
Currently considered to be a junior subjective synonym of *Apatetris* Staudinger, 1879 (Gozmány, 1955, *Annls hist.-nat. Mus. natn. hung.*, S.N. **6** : 315).
Originally described in the Glyphipterygidae [= Glyphipterigidae]; subsequently transferred to the Gelechiidae (Gozmány, 1955, *Annls hist.-nat. Mus. natn. hung.*, S.N. **6** : 315).

CATELAPHRIS Meyrick, 1925, *Genera Insect.* **184** : 16 [key], 182.
Type-species: ***Brachmia torrefacta*** Meyrick, 1914, *Ann. S. Afr. Mus.* **10** : 245, by original designation and monotypy.

CATHEGESIS Walsingham, 1910, *Biologia cent.-am.*, *Zool.*, Lepid.-Heterocera **4** : 27.
Type species: ***Cathegesis vinitincta*** Walsingham, 1910, *ibid.* **4** : 27, fig. 7, by original designation.
Currently considered to be a junior subjective synonym of *Acompsia* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 142).

CATOPTRISTIS Meyrick, 1925, *Genera Insect.* **184** : 9 [key], 134.
Type-species: ***Strobisia trissoxantha*** Meyrick, 1922, *Trans. ent. Soc. Lond.* **1922** : 100, by original designation and monotypy.

CAULASTROCECIS Chrétien, 1931, *Amat. Papillons* **5** : 295.
Type-species: ***Doryphora gypsella*** Constant, 1893, *Annls Soc. ent. Fr.* **62** : 396, pl. 11, fig. 6, by monotypy.

‡*CCCIDOPHAGA* Meyrick, 1925, *Genera Insect.* **184** : 22.
Incorrect subsequent spelling of *Cecidophaga* Walsingham, 1911.

CECIDOLECHIA* Kieffer & Jörgensen, 1910, *Zentbl. Bakt. ParasitKde*, (2. Abt.) **27 : 427.
Type-species: ***Cecidolechia maculicostella*** Kieffer & Jörgensen, 1910, *ibid.* **27** : 427, by monotypy.

Cecidolechia and *C. maculicostella* originated from Strand but were used and unintentionally made nomenclaturally available by Kieffer & Jörgensen prior to the proposal and description by Strand, 1911, *Berl. ent. Z.* **55** : 172.

Originally described in the Tineid[ae]; subsequently included in the Gelechiidae (Strand, 1911, *Berl. ent. Z.* **55** : 172); currently placed in the Oecophoridae (Meyrick, 1922, *Genera Insect.* **180** : 35).

CECIDONOSTOLA Amsel, 1958, *Beitr. naturk. Forsch. SüdwDtl.* **17** : 81.

Type-species: ***Cecidonostola tamariciella*** Amsel, 1958, *ibid.* **17** : 81, fig. 21, pl. 5, fig. 9, by original designation and monotypy.

Currently considered to be a junior subjective synonym of *Parapodia* Joannis, 1912 (Sattler, 1962, *Beitr. naturk. Forsch. SüdwDtl.* **21** : 51). *C. tamariciella* Amsel, 1958, is currently considered to be a junior subjective synonym of *Gelechia sinaica* Frauenfeld, 1859, *Verh. zool.-bot. Ges. Wien* **9** : 323, figs (Sattler, 1962, *Beitr. naturk. Forsch. SüdwDtl.* **21** : 53), which at the same time is a senior subjective synonym of *Parapodia tamaricicola* Joannis, 1912, the type-species of *Parapodia* Joannis, 1912.

‡*CECIDOPHAGA* Walsingham, 1904, *Entomologist's mon. Mag.* **40** : 215 (nomen nudum).

Published without description or indication and associated species. Subsequently made nomenclaturally available by Walsingham, 1911, *ibid.* **47** : 189.

CECIDOPHAGA Walsingham, 1911, *Entomologist's mon. Mag.* **47** : 189.

Type-species: ***Cecidophaga tamaricicola*** Walsingham, 1911, *ibid.* **47** : 190, by original designation and monotypy.

Junior subjective synonym of *Apatetris* Staudinger, 1879 (Meyrick, 1918, *Exot. Microlepidopt.* **2** : 117). Currently considered to be a valid genus (Janse, 1951, *Moths S. Afr.* **5**, pl. 101, fig. 8, pl. 102, figs 1, 2).

See also: ‡*Cccidophaga* Meyrick, 1925; ‡*Cecidoplaga* Janse, 1951.

‡*CECIDOPLAGA* Janse, 1951, *Moths S. Afr.* **5**, legends to pl. 101, fig. 8, pl. 102, figs 1, 2; 1954, *ibid.* **5** : 464 [index, under *tamaricicola*].

Incorrect subsequent spelling of *Cecidophaga* Walsingham, 1911.

CELETODES Meyrick, 1921, *Zool. Meded. Leiden* **6** : 166.

Type-species: ***Celetodes dracopis*** Meyrick, 1921, *ibid.* **6** : 166, by monotypy.

‡*CELLARIA* Neave, 1939, *Nomencl. zool.* **1** : 616.

Incorrect subsequent spelling of *Chelaria* Haworth, 1828.

CERATOPHORA Heinemann, 1870, *Schmett. Dtl. Schweiz,* (2)**2**(1) : 325 (nom. praeocc.).

Type-species: ***Recurvaria rufescens*** Haworth, 1828, *Lepid. Br.* : 555, by subsequent designation: Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 84.

Ceratophora Heinemann, 1870, is a junior homonym of *Ceratophora* Gray, [1832–35] (Reptilia). Currently considered to be a junior subjective synonym of *Brachmia* Hübner, [1825] (Spuler, 1910, *Schmett. Eur.* **2** : 351).

See also: *Brachycrossata* Heinemann, 1870.

CEROFRONTIA Janse, 1951, *Moths S. Afr.* **5** : 230.

Type-species: ***Cerofrontia griseotincta*** Janse, 1951, *ibid.* **5** : 230, figs, by original designation and monotypy.

CERYCANGELA Meyrick, 1925, *Genera Insect.* **184** : 17 [key], 134.

Type-species: ***Zalithia sacricola*** Meyrick, 1922, *Trans. ent. Soc. Lond.* **1922** : 102, by original designation and monotypy.

****CEUTHOMADARUS*** Mann, 1864, *Wien. ent. Mschr.* **8** : 188.

Type-species: ***Ceuthomadarus tenebrionellus*** Mann, 1864, *ibid.* **8** : 188, pl. 5, figs 1, 2, by monotypy.

Originally not placed in a family; subsequently included in the Gelechidae [= Gelechiidae] (Wocke, 1871, *in* Staudinger & Wocke, *Cat. Lepid. eur. Faunengebiets* : 301); Timyridae

[= Lecithoceridae] (Gozmány, 1961, *Acta zool. hung.* **7** : 107); currently placed in the Lecithoceridae.

See also: *Asbolistis* Meyrick, 1936; *Exorgana* Gozmány, 1957.

****CHAETOCHILUS*** Stephens, 1834, *Ill. Br. Ent.*, Haustellata **4** : 337.

Type-species: [***Phalaena***] ***sequella*** Clerck, 1759, *Icon. Insect. rariorum* **1**, pl. 10, fig. 14; 1864, *ibid.* **2**, index : [3], by subsequent designation: Westwood, 1840, *Introd. mod. Classif. Insects* **2**, *Synopsis Genera Br. Insects* : 114.

The type-species was erroneously attributed to Linnaeus by Stephens and Westwood.

The type-designations by Westwood, 1840, *Introd. mod. Classif. Insects* **2**, *Synopsis Genera Br. Insects*, have been validated by the International Commission on Zoological Nomenclature, 1922, Opinion 71, *Smithson. misc. Collns* **73** : 16–18.

Chaetochilus was erroneously attributed to Fitch, 1854, *Trans. N. Y. St. agric. Soc.* **13** : 186 [page reference erroneously cited as 231 by Gaede], and at the same time placed as a junior subjective synonym of *Dichomeris* Hübner, 1818 (Gaede, 1937, *Lepid. Cat.* **79** : 428). Fitch correctly attributed *Chaetochilus* to Stephens and included *Rhinosia pometella* Harris, 1853, *Cambridge Chronicle*, 23rd July, 1853[2], which is currently considered to be a junior subjective synonym of *Dichomeris ligulella* Hübner, 1818, the type-species of *Dichomeris* Hübner, 1818 (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 507).

Originally described in the Tineidae; erroneously included in the Gelechiidae (Gaede, 1937, *Lepid. Cat.* **79** : 428); currently placed in the Plutellidae (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 44).

CHAETOPOGON Rye, 1881, *Zool. Rec.* (1879) **16**, index : 9.

Type-species: *Pogochaetia solitaria* Staudinger, 1879, *Horae Soc. ent. ross.* **15** : 310, by monotypy of *Pogochaetia* Staudinger, 1879.

Unjustified emendation of *Pogochaetia* Staudinger, 1879.

CHALCOMIMA Meyrick, 1929, *Exot. Microlepidopt.* **3** : 507.

Type-species: ***Chalcomima hoplodoxa*** Meyrick, 1929, *ibid.* **3** : 507, by monotypy.

CHALINIASTIS Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 258 [key], 301.

Type-species: ***Chaliniastis astrapaea*** Meyrick, 1904, *ibid.* **29** : 302, by monotypy.

****CHARADRAULA*** Meyrick, 1931, *Exot. Microlepidopt.* **4** : 124.

Type-species: ***Charadraula chersopsamma*** Meyrick, 1931, *ibid.* **4** : 124, by monotypy.

C. chersopsamma Meyrick, 1931, is currently considered to be a junior subjective synonym of *Hapsifera parcella* Lederer, 1855, *Verh. zool.-bot. Ver. Wien* **5** : 228, pl. 4, fig. 12, the type-species of *Bubulcellodes* Amsel, 1942 (Gozmány, 1967, *Acta zool. hung.* **13** : 275).

Originally described in the Oecophoridae; subsequently transferred to the Holcopogonidae (Gozmány, 1967, *Acta zool. hung.* **13** : 275).

See also: *Bubulcellodes* Amsel, 1942.

CHARISTICA Meyrick, 1925, *Genera Insect.* **184** : 9 [key], 17 [key], 133.

Type-species: ***Zalithia rhodopetala*** Meyrick, 1922, *Trans. ent. Soc. Lond.* **1922** : 102, by original designation.

CHELARIA Haworth, 1828, *Lepid. Br.* : 526.

Type-species: *Chelaria conscripta* Haworth, 1828, *ibid.* : 526, by monotypy.

Junior objective synonym of *Hypatima* Hübner, [1825]. *C. conscripta* Haworth, 1828, is an unjustified emendation of [*Tinea*] *conscriptella* Hübner, [1805], *Samml. eur. Schmett.* **8**, pl. 41, fig. 283, the type-species of *Hypatima* Hübner, [1805]. *T. conscriptella* Hübner, [1805], is currently considered to be a junior subjective synonym of *Phalaena* (*Tinea*) *rhomboidella* Linnaeus, 1758, *Syst. Nat.* (ed. 10) **1** : 538 (Gozmány, 1958, *Fauna Hung.* **40** : 166).

See also: *Allocota* Meyrick, 1904; ‡*Cellaria* Neave, 1939; ‡*Cheleria* Lhomme, [1948]; *Cymatomorpha* Meyrick, 1904; *Deuteroptila* Meyrick, 1904; *Episacta* Turner, 1919; *Psoricoptera* Stainton, 1854; *Semodictis* Meyrick, 1909.

‡*CHELERIA* Lhomme, [1948], *Cat. Lépid. Fr. Belg.* **2** : 656.

Incorrect subsequent spelling of *Chelaria* Haworth, 1828.

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[2] I have not seen this paper which has been examined by Dr R. W. Hodges, Washington.

CHELOPHOBA Meyrick, 1935, *in* Caradja & Meyrick, *Mater. Microlepid. Fauna chin. Provinzen Kiangsu, Chekiang, Hunan* : 71.

Type-species: ***Chelophoba aganactes*** Meyrick, 1935, *ibid.* : 72, by monotypy.

*****CHERSOGENES*** Walsingham, 1908, *Proc. zool. Soc. Lond.* **1907** : 947.

Type-species: ***Chersogenes victimella*** Walsingham, 1908, *ibid.* **1907** : 947, pl. 51, fig. 17, by original designation and monotypy.

Correct date of publication (1908, June 4th) taken from 'Notice' on the back cover of the Proceedings for 1908 (part 1).

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Symmocidae (Gozmány, 1964, *Acta zool. hung.* **10** : 124).

See also: *Epanastasis* Walsingham, 1908.

CHILOPSELAPHUS Mann, 1867, *Verh. zool.-bot. Ges. Wien* **17** : 849.

Type-species: ***Chilopselaphus fallax*** Mann, 1867, *ibid.* **17** : 850, by monotypy.

See also: ‡*Chilopsephalus* Rebel, 1901.

‡*CHILOPSEPHALUS* Rebel, 1901, *in* Staudinger & Rebel, *Cat. Lepid. palaearctischen Faunengebietes* **2** : 161.

Incorrect subsequent spelling of *Chilopselaphus* Mann, 1867.

CHIONELLA* Amsel, 1935, *Mitt. zool. Mus. Berl.* **20 : 311 (nom. praeocc.).

Type-species: *Chionella leucella* Amsel, 1935, *ibid.* **20** : 311, figs, by monotypy.

Chionella Amsel, 1935, is a junior homonym of *Chionella* Cossmann, 1886 (Mollusca); *Chionellidea* Amsel, 1940, was proposed as the objective replacement name. ‡*Chionella* Jeffreys, 1840 (Mollusca) (Neave, 1939, *Nomencl. zool.* **1** : 696), was first published in synonymy and is therefore invalid and unavailable for purposes of homonymy.

Originally described in the Scythrididae; here transferred to the Symmocidae.

****CHIONELLIDEA*** Amsel, 1940, *Veröff. dt. Kolon. u. Übersee-Mus. Bremen* **3** : 53 (objective replacement name for *Chionella* Amsel, 1935, nom. praeocc.).

Type-species: ***Chionella leucella*** Amsel, 1935, *Mitt. zool. Mus. Berl.* **20** : 311, figs, by monotypy of *Chionella* Amsel, 1935.

Originally proposed in the Scythrididae; here transferred to the Symmocidae.

‡*CHIONODA* Hübner, [1826], *Anz. Verz. bekannter Schmett.* : 67.

Incorrect subsequent spelling of *Chionodes* Hübner, [1825].

Correct date of publication ([1826]) taken from Opinion 150, *Opin. Decl. int. Commn zool. Nom.* **2** : 166 (1943).

Recorded by Hemming, 1937, *Hübner* **2** : 170, and Neave, 1939, *Nomencl. zool.* **1** : 696, as an emendation of *Chionodes* Hübner, [1825]; however, there is no evidence that ‡*Chionoda* is a 'demonstrably intentional change in the original spelling' (*Int. Code zool. Nom.*, Article 33 (a)) of *Chionodes* Hübner, [1825].

CHIONODES Hübner, [1825], *Verz. bekannter Schmett.* : 420.

Type-species: **[*Tinea*] *luctificella*** Hübner, [1813], *Samml. eur. Schmett.* **8**, pl. 45, fig. 312, by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 73.

Correct date of publication ([1825]) taken from Opinion 150, *Opin. Decl. int. Commn zool. Nom.* **2** : 166 (1943).

The type-species was cited by Meyrick as '*G. lugubrella*, Fabricius'. This was not an originally included nominal species of *Chionodes* Hübner, [1825], however, Meyrick placed it on p. 76 as the senior synonym of *T. luctificella* Hübner, [1813] (*Int. Code zool. Nom.*, Article 69 (a)(iv)).

Junior subjective synonym of *Gelechia* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 73); currently considered to be a valid genus (Busck, 1939, *Proc. U.S. natn. Mus.* **86** : 574). *T. luctificella* Hübner, [1813], is currently considered to be a junior subjective synonym of *Tinea lugubrella* Fabricius, 1794, *Ent. syst.* **3**(2) : 299 (Zeller, 1839, *Isis, Leipzig* **1839** : 200).

See also: ‡*Chionoda* Hübner, [1826].

CHLOROLYCHNIS Meyrick, 1925, *Genera Insect.* **184** : 5 [key], 241.

Type-species: ***Gelechia agnatella*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 633, by original designation and monotypy.

CHRETIENELLA Turati, 1919, *Naturalista sicil.* **23** : 330.

Type-species: ***Chretienella vaucheri*** Turati, 1919, *ibid.* **23** : 330, figs, by monotypy.

CHRETIENIA Spuler, 1910, *Schmett. Eur.* **2** : 359.

Type-species: ***Gelechia oxycedrella*** Millière, 1871, *Icon. Description Chenilles Lépid.* **3** : 177, pl. 118, figs 1–6, by monotypy.

‡*CHRYSESTHIA* Herrich-Schäffer, 1853, *Syst. Bearb. Schmett. Eur.* **5**, legend to pl. 14, fig. 10.

Incorrect subsequent spelling of *Chrysoesthia* Hübner, [1825].

CHRYSIA Bruand, 1850, *Mém. Soc. Emul. Doubs* (1)**3**(3) : 44.

Type-species: ***Tinea hermannella*** Fabricius, 1781, *Species Insect.* **2** : 509, by PRESENT DESIGNATION.

Currently considered to be a junior subjective synonym of *Chrysoesthia* Hübner, [1825], **syn. n.** *T. hermannella* Fabricius, 1781, is currently considered to be a senior subjective synonym of [*Tinea*] *zinckenella* Hübner, [1813], the type-species of *Chrysoesthia* Hübner, [1825] (Zeller, 1839, *Isis, Leipzig* **1839** : 202).

Originally described in the Roesler[s]tammidae; here transferred to the Gelechiidae.

CHRYSOESTHIA Hübner, [1825], *Verz. bekannter Schmett.* : 422.

Type-species: [***Tinea***] ***zinckenella*** Hübner, [1813], *Samml. eur. Schmett.* **8**, pl. 59, figs 401, 402 [as ‡*zinckeella*, incorrect original spelling], by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 40.

Correct date of publication ([1825]) taken from Opinion 150, *Opin. Decl. int. Commn zool. Nom.* **2** : 166 (1943).

Hübner, on pl. 59, spelt the name of the type-species '*zinckeella*', which he subsequently altered to '*zinckenella*' (Hübner, [1825], *Verz. bekannter Schmett.* : 422). As the species undoubtedly was named after the entomologist Zincken and as the spelling *zinckenella* has been generally used, it is here accepted as a justified emendation. The type-species was cited by Meyrick as '*A. hermannella*, Fabricius'. This was not one of the originally included nominal species of *Chrysoesthia* Hübner, [1825], however, Meyrick placed it on p. 47 as the senior synonym of *T. zinckenella* Hübner, [1813] (*Int. Code zool. Nom.*, Article 69 (a)(iv)).

Incorrect type-species: *Phalaena* (*Tinea*) *roesella* Linnaeus, 1758, *Syst. Nat.* (ed. 10) **1** : 541, designated by Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 48. Fletcher, according to a note in his card index considered the redescription of *Chrysoesthia* Hübner, [1825], by Herrich-Schäffer, 1853, *Syst. Bearb. Schmett. Eur.* **5** : 56, pl. 14, figs 10, 11, which was based on *Ph.* (*T.*) *roesella* Linnaeus, 1758, to be a type-designation. This fails to satisfy the conditions of the *Int. Code zool. Nom.*, Article 69 (a)(iii) and thus does not constitute a valid type-designation. The earliest valid type-designation for *Chrysoesthia* Hübner, [1825], is therefore that by Meyrick, 1925, which has priority over that by Fletcher, 1929.

Junior subjective synonym of *Aristotelia* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 40); currently considered to be a valid genus. *T. zinckenella* Hübner, [1813], is currently considered to be a junior subjective synonym of *Tinea hermannella* Fabricius, 1781, *Species Insect.* **2** : 509, the type-species of *Chrysia* Bruand, 1850 (Zeller, 1839, *Isis, Leipzig* **1839** : 202).

See also: *Chrysia* Bruand, 1850; ‡*Chrysesthia* Herrich-Schäffer, 1853.

CHRYSOPORA Clemens, 1860, *Proc. Acad. nat. Sci. Philad.* **1860** : 362 (objective replacement name for *Nomia* Clemens, 1860, nom. praeocc.).

Type-species: ***Nomia lingulacella*** Clemens, 1860, *ibid.* **1860** : 167, by monotypy of *Nomia* Clemens, 1860.

Junior subjective synonym of *Aristotelia* Hübner, [1825] (Walsingham, 1907, *Fauna hawaii.* **1**(5) : 478); *Microsetia* Stephens, 1829 (Gozmány, 1958, *Fauna Hung.* **40** : 258); subgenus of *Aristolelia* Hübner, [1825] (Gaede, 1937, *Lepid. Cat.* **79** : 43).

See also: *Nannodia* Heinemann, 1870.

CHTHONOGENES Meyrick, 1938, *in* Caradja & Meyrick, *Dt. ent. Z. Iris* **52** : 4.
Type-species: ***Chthonogenes synclepta*** Meyrick, 1938, *ibid.* **52** : 4, by monotypy.

CIRRHA Chambers, 1872, *Can. Ent.* **4** : 146.
Type-species: ***Depressaria albisparsella*** Chambers, 1872, *ibid.* **4** : 92, by original designation and monotypy.

Currently considered to be a junior subjective synonym of *Gelechia* Hübner, [1825] (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 511).

CLADODES Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 330 (nom. praeocc.).
Type-species: *Tinea dimidiella* [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend* : 141, by subsequent designation: Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 84.

The type-species was included by Heinemann as '*dimidiella* V.'

Cladodes Heinemann, 1870, is a junior homonym of *Cladodes* Solier, 1849 (Coleoptera), and a junior objective synonym of *Brachmia* Hübner, [1825]. *Eudodacles* Snellen, 1889, was therefore unnecessarily proposed as the objective replacement name. Subgenus of *Brachmia* Hübner, [1825] (Spuler, 1910, *Schmett. Eur.* **2** : 351).

CLEODORA Stephens, 1834, *Ill. Br. Ent.*, Haustellata **4** : 220 (nom. praeocc.).
Type-species: *Tinea silacella* Hübner sensu Stephens, 1834 [= *Phalaena* (*Tinea*) *lappella* Linnaeus, 1758, *Syst. Nat.* (ed. 10) **1** : 537], by subsequent designation: Curtis, 1837, *Br. Ent.* **14,** no. 671.

The type-species was included by Stephens as '*Ti. silacella.* Hübner.' and cited by Curtis as '*Tinea silacella* Hüb. ?'. *T. silacella* Hübner sensu Stephens, 1834, is a misidentification of *Ph.* (*T.*) *lappella* Linnaeus, 1758 (Stainton, 1854, *Insecta Br.*, Lepid.: Tineina : 140).

Cleodora Stephens, 1834, is a junior homonym of *Cleodora* Péron & Lesueur, 1810 (Mollusca). Currently considered to be a senior subjective synonym of *Metzneria* Zeller, 1839, which is used as the subjective replacement name (Walsingham & Durrant, 1899, *Entomologist's mon. Mag.* **35** : 199).

Originally described in the Yponomeutidae; subsequently included in the Tineidae (Curtis, 1837, *Br. Ent.* **14,** no. 671); Gelechi[i]dae (Stainton, 1854, *Insecta Br.*, Lepid.: Tineina : 139).

Curtis, when designating the type-species of *Cleodora* Stephens, 1834, based the accompanying description of the generic characters on *Cleodora cytisella* Curtis, 1837. Stainton, 1854, *Insecta Br.*, Lepid.: Tineina : 142 based *Cleodora* on *C. cytisella* Curtis, 1837, and attributed the name to Curtis, while placing *Cleodora* Stephens in synonymy under *Parasia* Duponchel, [1846]. Subsequent authors followed this interpretation and erroneously attributed *Cleodora* either to Curtis, 1837, or Stainton, 1854, until Meyrick, 1894, proposed *Paltodora* for *Cleodora* Stephens sensu auctorum.

CLEPSIMACHA Meyrick, 1934, *Exot. Microlepidopt.* **4** : 450.
Type-species: ***Clepsimacha eriocrossa*** Meyrick, 1934, *ibid.* **4** : 450, by monotypy.
See also: *Cratinitis* Meyrick, 1935.

CLEPSIMORPHA Janse, 1960, *Moths S. Afr.* **6** : 190.
Type-species: ***Clepsimorpha inconspicua*** Janse, 1960, *ibid.* **6** : 191, figs, by original designation and monotypy.

*****CLEROGENES*** Meyrick, 1921, *Ann. Transv. Mus.* **8** : 93.
Type-species: ***Clerogenes meledantis*** Meyrick, 1921, *ibid.* **8** : 93, by monotypy.

Junior subjective synonym of *Oegoconia* Stainton, 1854 (Meyrick, 1925, *Genera Insect.* **184** : 200); currently considered to be a valid genus (Janse, 1958, *Moths S. Afr.* **6** : 127).

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Symmocid[ae] (Gozmány, 1966, *Acta zool. hung.* **12** : 74).

CLISTOTHYRIS Zeller, 1877, *Horae Soc. ent. ross.* **13** : 330.
Type-species: ***Clistothyris villosula*** Zeller, 1877, *ibid.* **13** : 331, pl. 4, figs 104 a, b, by monotypy.

CNAPHOSTOLA Meyrick, 1918, *Exot. Microlepidopt.* **2** : 131.
Type-species: ***Cnaphostola adamantina*** Meyrick, 1918, *ibid.* **2** : 132, by monotypy.

COCONYMPHA Meyrick, 1931, *Exot. Microlepidopt.* **4** : 65.
Type-species: ***Coconympha iriarcha*** Meyrick, 1931, *ibid.* **4** : 66, by monotypy.

COLEOSTOMA Meyrick, 1922, *Trans. ent. Soc. Lond.* **1922** : 99.
Type-species: ***Coleostoma entryphopa*** Meyrick, 1922, *ibid.* **1922** : 99, by monotypy.

‡*COLEOTECHNISTES* Riley, 1891, *in* Smith, *List Lepid. boreal Am.* : 106.
Incorrect subsequent spelling of *Coleotechnites* Chambers, 1880.

COLEOTECHNITES Chambers, 1880, *Rep. Ent. U.S. Dep. Agric.* **1879** : 206.
Type-species: ***Coleotechnites citriella*** Chambers, 1880, *ibid.* **1879** : 206, by monotypy.
Junior subjective synonym of *Recurvaria* Haworth, 1828 (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 52, 194); currently considered to be a junior subjective synonym of *Eidothea* Chambers, 1873, for which it is used as the subjective replacement name (Hodges, 1965, *Ent. News* **76** : 263).
Originally described in the Tineidae; subsequently included in the Coleophoridae (Riley, 1891, *in* Smith, *List Lepid. boreal Am.* : 106); Elachistidae (Dyar, [1903] *Bull. U.S. natn. Mus.* **52** : 534); currently placed in the Gelechiidae (Barnes & McDunnough, 1917, *Check List Lepid. boreal Am.* : 155).
See also: ‡*Coleotechnistes* Riley, 1891; *Eucordylea* Dietz, 1900; *Evagora* Clemens, 1860; *Pulicalvaria* Freeman, 1963.

COLOBODES Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 257 [key], 297 (nom. praeocc.).
Type-species: *Colobodes insomnis* Meyrick, 1904, *ibid.* **29** : 297, by monotypy.
Colobodes Meyrick, 1904, is a junior homonym of *Colobodes* Schoenherr, 1837 (Coleoptera); currently considered to be a senior subjective synonym of *Idiophantis* Meyrick, 1904, which is used as the subjective replacement name (Meyrick, 1925, *Genera Insect.* **184** : 108).

COLONANTHES Meyrick, 1923, *Exot. Microlepidopt.* **3** : 12.
Type-species: ***Colonanthes plectanopa*** Meyrick, 1923, *ibid.* **3** : 12, by monotypy.

COLOPTERYX Hofmann, 1898, *Dt. ent. Z. Iris* **10** : 239 (nom. praeocc.).
Type-species: *Colopteryx conchylidella* Hofmann, 1898, *ibid.* **10** : 239, by monotypy.
Correct date of publication (1898, January 12th) taken from vol. **10** : [i] 'Inhalts-Uebersicht', footnote.
Colopteryx Hofmann, 1898, is a junior homonym of *Colopteryx* Ridgway, 1888 (Aves); *Coloptilia* Fletcher, 1940, was proposed as the objective replacement name.

COLOPTILIA Fletcher, 1940, *Entomologist's Rec. J. Var.* **52** : 17 (objective replacement name for *Colopteryx* Hofmann, 1898, nom. praeocc.).
Type-species: ***Colopteryx conchylidella*** Hofmann, 1898, *Dt. ent. Z. Iris* **10** : 239, by monotypy of *Colopteryx* Hofmann, 1898.

****COLPOMORPHA*** Meyrick, 1929, *Exot. Microlepidopt.* **3** : 528.
Type-species: ***Colpomorpha orthomeris*** Meyrick, 1929, *ibid.* **3** : 528, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Oecophoridae (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).

COMMATICA Meyrick, 1909, *Trans. ent. Soc. Lond.* **1909** : 18.
Type-species: ***Commatica eremna*** Meyrick, 1909, *ibid.* **1909** : 19, by monotypy.
See also: *Apopira* Walsingham, 1911.

COMPSOLECHIA Meyrick, 1918, *Exot. Microlepidopt.* **2** : 137.
Type-species: ***Anacampsis diortha*** Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 263, by original designation.
Junior subjective synonym of *Anacampsis* Curtis, 1827 (Busck, 1919, *Proc. ent. Soc. Wash.* **21** : 95); currently considered to be a valid genus. *A. diortha* Meyrick, 1914, was placed as a

junior subjective synonym of *Gelechia repandella* Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 602, by Meyrick, 1925, *Genera Insect.* **184** : 121, but is currently considered to be a valid species (Clarke, 1969, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **6** : 473).

COMPSOSARIS Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 233.
Type-species: ***Compsosaris testacea*** Meyrick, 1914, *ibid.* **1914** : 234, by monotypy.
See also: ‡*Gompsosaris* Gaede, 1937.

CONIOGYRA Meyrick, 1921, *Ann. Transv. Mus.* **8** : 66.
Type-species: ***Coniogyra dilucescens*** Meyrick, 1921, *ibid.* **8** : 66, by monotypy.

****CONQUASSATA*** Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S. N. **8** : 330.
Type-species: ***Symmoca*** **(*Conquassata*)** ***perobscurata*** Gozmány, 1957, *ibid.* **8** : 330, fig. 5 A, by original designation.
Originally proposed as a subgenus of *Symmoca* Hübner, [1825]. Here considered to be a junior subjective synonym of *Parasymmoca* Rebel, 1903, **syn. n.**, which Gozmány erroneously considered to be a nomen nudum.
Originally described in the Gelechiidae: Symmocinae [= Symmocidae].

****COPHOMANTELLA*** Fletcher, 1940, *Entomologist's Rec. J. Var.* **52** : 17 (objective replacement name for *Cophomantis* Meyrick, 1925, nom. praeocc.).
Type-species: ***Onebala elaphopis*** Meyrick, 1910, *J. Bombay nat. Hist. Soc.* **20** : 459, by original designation for *Cophomantis* Meyrick, 1925.
Originally proposed in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 345).

COPHOMANTIS* Meyrick, 1925, *Genera Insect.* **184 : 5 [key], 242 (nom. praeocc.).
Type-species: *Onebala elaphopis* Meyrick, 1910, *J. Bombay nat. Hist. Soc.* **20** : 459, by original designation.
Cophomantis Meyrick, 1925, is a junior homonym of *Cophomantis* Peters, 1870 (Amphibia); *Cophomantella* Fletcher, 1940, was proposed as the objective replacement name.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

COPOCERCIA Zeller, 1877, *Horae Soc. ent. ross.* **13** : 374.
Type-species: ***Copocercia crambinella*** Zeller, 1877, *ibid.* **13** : 375, pl. 5, figs 129 a, b, by monotypy.
Currently considered to be a junior subjective synonym of *Polyhymno* Chambers, 1874 (Walsingham, 1897, *Proc. zool. Soc. Lond.* **1897** : 77).

COPROPTILIA Snellen, 1903, *Tijdschr. Ent.* **46** : 32.
Type-species: ***Coproptilia glebicolorella*** Snellen, 1903, *ibid.* **46** : 34, by monotypy.

COPTICOSTOLA Meyrick, 1929, *Trans. ent. Soc. Lond.* **76** : 508.
Type-species: ***Untomia acuminata*** Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 75, pl. 2, fig. 31, by monotypy.

****CORNUSYMMOCA*** Gozmány, 1965, *Annls hist.-nat. Mus. natn. hung.* **57** : 423.
Type-species: ***Cornusymmoca mongolica*** Gozmány, 1965, *ibid.* **57** : 423, figs 1, 2, by original designation and monotypy.
Originally described and currently placed in the Symmocidae.

****CORTHYNTIS*** Meyrick, 1916, *Exot. Microlepidopt.* **1** : 574.
Type-species: ***Corthyntis chlorotricha*** Meyrick, 1916, *ibid.* **1** : 575, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; currently considered to be a junior subjective synonym of *Eridachtha* Meyrick, 1910 (Meyrick, 1925, *Genera Insect.* **184** : 220), which automatically places *Corthyntis* Meyrick, 1916, in the Lecithoceridae.

CORYNAEA Turner, 1919, *Proc. R. Soc. Qd* **31** : 129.
Type-species: ***Corynaea dilechria*** Turner, 1919, *ibid.* **31** : 130, by monotypy.
Correct date of publication (1919, December 30th) taken from original wrapper.

COSMARDIA Povolný, 1965, *Acta ent. bohemoslovaca* **62** : 484.
Type-species: [***Tinea***] ***morizella*** [sic !] Geyer, [1836], *in* Hübner, *Samml. eur. Schmett.* **8**, pl. 71, figs 476, 477, by original designation and monotypy.
The type-species was cited by Povolný as '*Gelechia moritzella* Hübner, 1841'. *T. morizella* Geyer, [1836], is currently considered to be a junior subjective synonym of *Oecophora moritzella* Treitschke, 1835, *Schmett. Eur.* **10**(3) : 214, **syn. n.** The name *moritzella* has been erroneously attributed to Hübner by most authors.

COTYLOSCIA Meyrick, 1923, *Exot. Microlepidopt.* **3** : 3.
Type-species: ***Trichotaphe caustonota*** Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 280, by original designation.

COUDIA Chrétien, 1915, *Annls Soc. ent. Fr.* **84** : 326.
Type-species: ***Coudia strictella*** Chrétien, 1915, *ibid.* **84** : 326, fig. 3, by monotypy.

COYDALLA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **30** : 1037.
Type-species: ***Coydalla interguttella*** Walker, 1864, *ibid.* **30** : 1038, by monotypy.
Junior subjective synonym of *Onebala* Walker, 1864 (Meyrick, 1910, *Trans. ent. Soc. Lond.* **1910** : 449); currently considered to be a valid genus (Meyrick, 1925, *Genera Insect.* **184** : 228).

CRAMBODOXA Meyrick, 1913, *Trans. ent. Soc. Lond.* **1913** : 174.
Type-species: ***Crambodoxa platyaula*** Meyrick, 1913, *ibid.* **1913** : 174, by monotypy.

CRASIMORPHA Meyrick, 1923, *Exot. Microlepidopt.* **3** : 33.
Type-species: ***Crasimorpha peragrata*** Meyrick, 1923, *ibid.* **3** : 33, by monotypy.

CRASPEDOTIS Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 258 [key], 326.
Type-species: ***Craspedotis pragmatica*** Meyrick, 1904, *ibid.* **29** : 326 [key], 327, by original designation.

CRATINITIS Meyrick, 1935, *Exot. Microlepidopt.* **4** : 561.
Type-species: ***Cratinitis tubigera*** Meyrick, 1935, *ibid.* **4** : 561, by monotypy.
Correct date of publication (1935, April) taken from original wrapper.
Currently considered to be a junior subjective synonym of *Clepsimacha* Meyrick, 1934 (Meyrick, 1935, *ibid.* **4** : 586). *C. tubigera* Meyrick, 1935, is currently considered to be a junior subjective synonym of *Clepsimacha eriocrossa* Meyrick, 1934, the type-species of *Clepsimacha* Meyrick, 1934 (Meyrick, 1935, *ibid.* **4** : 586).

CREMONA Busck, 1934, *Proc. ent. Soc. Wash.* **36** : 82.
Type-species: ***Cremona cotoneastri*** Busck, 1934, *ibid.* **36** : 83, pl. 14, figs 1–5, by original designation and monotypy.
Currently considered to be a junior subjective synonym of *Rhynchopacha* Staudinger, 1871 (Sattler, 1968, *Dt. ent. Z.*, N.F. **15** : 111). *C. cotoneastri* Busck, 1934, is currently considered to be a junior subjective synonym of *Gelechia triatomaea* Mühlig, 1864, *Stettin. ent. Ztg* **25** : 101 (Sattler, 1968, *Dt. ent. Z.*, N.F. **15** : 115).

****CROCANTHES*** Meyrick, 1886, *Trans. ent. Soc. Lond.* **1886** : 277.
Type-species: ***Crocanthes prasinopis*** Meyrick, 1886, *ibid.* **1886** : 277, by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 231.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).
See also: *Aprosoesta* Turner, 1919.

****CROCOGMA*** Meyrick, 1918 (April), *Exot. Microlepidopt.* **2** : 100.
Type-species: ***Crocogma isocola*** Meyrick, 1918, *ibid.* **2** : 100, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the

Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

See also: *Demopractis* Meyrick, 1918 (May).

CROESOPOLA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 256 [key], 410.

Type-species: ***Atasthalistis euchroa*** Lower, 1900, *ibid.* **25** : 47, by monotypy.

Currently considered to be a junior subjective synonym of *Atasthalistis* Meyrick, 1886 (Meyrick, 1925, *Genera Insect.* **184** : 136).

CROSSOBELA Meyrick, 1923, *Exot. Microlepidopt.* **3** : 34.

Type-species: ***Crossobela barysphena*** Meyrick, 1923, *ibid.* **3** : 34, by original designation and monotypy.

CRYPSIMAGA Meyrick, 1931, *Exot. Microlepidopt.* **4** : 66.

Type-species: ***Crypsimaga cyanosceptra*** Meyrick, 1931, *ibid.* **4** : 66, by monotypy.

CURVISIGNELLA Janse, 1951, *Moths S. Afr.* **5** : 231.

Type-species: ***Apatetris leucogaea*** Meyrick, 1921, *Ann. Transv. Mus.* **8** : 65, by original designation and monotypy.

CYMATOMORPHA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 257 [key], 411.

Type-species: ***Cymatomorpha euplecta*** Meyrick, 1904, *ibid.* **29** : 412, by monotypy.

Junior subjective synonym of *Chelaria* Haworth, 1828 (Meyrick, 1925, *Genera Insect.* **184** : 155); currently considered to be a junior subjective synonym of *Hypatima* Hübner, [1825] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 62, 113).

CYMATOPLEX Meyrick, 1925, *Genera Insect.* **184** : 10 [key], 223. (nom. praeocc.).

Type-species: *Homaloxestis aestuosa* Meyrick, 1913, *Ann. Transv. Mus.* **3** : 295, by original designation and monotypy.

Cymatoplex Meyrick, 1925, is a junior homonym of *Cymatoplex* Turner, 1910 (Lepidoptera: Geometridae); *Cymatoplicella* Fletcher, 1940, was proposed as the objective replacement name.

CYMATOPLICELLA Fletcher, 1940, *Entomologist's Rec. J. Var.* **52** : 18 (objective replacement name for *Cymatoplex* Meyrick, 1925, nom. praeocc.).

Type-species: ***Homaloxestis aestuosa*** Meyrick, 1913, *Ann. Transv. Mus.* **3** : 295, by original designation for and monotypy of *Cymatoplex* Meyrick, 1925.

CYMOTRICHA Meyrick, 1923, *Exot. Microlepidopt.* **2** : 626.

Type-species: ***Dichomeris miltophragma*** Meyrick, 1922, *Trans. ent. Soc. Lond.* **1922** : 115, by original designation.

See also: *Oxysactis* Meyrick, 1923.

****CYNICOCRATES*** Meyrick, 1935, *Exot. Microlepidopt.* **4** : 565.

Type-species: ***Cynicocrates tachytoma*** Meyrick, 1935, *ibid.* **4** : 566, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

****CYNICOSTOLA*** Meyrick, 1925, *Genera Insect.* **184** : 5 [key], 230.

Type-species: ***Onebala pogonias*** Meyrick, 1923, *Exot. Microlepidopt.* **3** : 43, by original designation and monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

****CYRICTODES*** Meyrick, 1926, *Exot. Microlepidopt.* **3** : 283.

Type-species: ***Cyrictodes phormophora*** Meyrick, 1926, *ibid.* **3** : 284, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Oecophoridae (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).

*‡*CYRMIA* Caradja, 1920, *Dt. ent. Z. Iris* **34** : 118.
Incorrect subsequent spelling of *Cyrnia* Walsingham, 1900.

CYRNIA Walsingham, 1900, *Entomologist's mon. Mag.* **36** : 218.
Type-species: ***Cyrnia barbata*** Walsingham, 1900, *ibid.* **36** : 219, by original designation and monotypy.
Currently considered to be a junior subjective synonym of *Holcopogon* Staudinger, 1879 (Walsingham, 1902, *Entomologist's mon. Mag.* **38** : 81). *C. barbata* Walsingham, 1900, is currently considered to be a junior subjective synonym of *Hypsolophus bubulcellus* Staudinger, 1859, *Stettin. ent. Ztg* **20** : 245 (Walsingham, 1902, *Entomologist's mon. Mag.* **38** : 81).
Originally not placed in a family, but associated with genera of Gelechiidae; subsequently transferred to the Holcopogonidae (Gozmány, 1967, *Acta zool. hung.* **13** : 278).

DACTYLETHRA Meyrick, 1906, *J. Bombay nat. Hist. Soc.* **17** : 153 (nom. praeocc.).
Type-species: *Dactylethra tetroctas* Meyrick, 1906, *ibid.* **17** : 153, by monotypy.
Dactylethra Meyrick, 1906, is a junior homonym of *Dactylethra* Cuvier, 1829 (Amphibia); *Dactylethrella* Fletcher, 1940, was proposed as the objective replacement name. *D. tetroctas* Meyrick, 1906, is currently considered to be a junior subjective synonym of *Anarsia candida* Stainton, 1859, *Trans. ent. Soc. Lond.*, N. S. **5** : 114 (Meyrick, 1925, *Genera Insect.* **184** : 164).

DACTYLETHRELLA Fletcher, 1940, *Entomologist's Rec. J. Var.* **52** : 18 (objective replacement name for *Dactylethra* Meyrick, 1906, nom. praeocc.).
Type-species: ***Dactylethra tetroctas*** Meyrick, 1906, *J. Bombay nat. Hist. Soc.* **17** : 153, by monotypy of *Dactylethra* Meyrick, 1906.

DACTYLOTA Snellen, 1876, *Tijdschr. Ent.* **19** : 23 (nom. praeocc.).
Type-species: *Dactylota kinkerella* Snellen, 1876, *ibid.* **19** : 23, pl. 1, fig., by monotypy.
Correct date of publication (1876) taken from original wrapper.
Dactylota Snellen, 1876, is a junior homonym of *Dactylota* Brandt, 1835 (Echinodermata); *Dactylotula* Cockerell, 1888, and *Didactylota* Walsingham, 1892, were proposed as the objective replacement names. Currently considered to be a junior subjective synonym of *Apatetris* Staudinger, 1879, (Meyrick, 1925, *Genera Insect.* **184** : 22).

DACTYLOTULA Cockerell, 1888, *W. Am. Scient.* **5** : 15 (objective replacement name for *Dactylota* Snellen, 1876, nom. praeocc.).
Type-species: ***Dactylota kinkerella*** Snellen, 1876, *Tijdschr. Ent.* **19** : 23, pl. 1, fig., by monotypy of *Dactylota* Snellen, 1876.
Currently considered to be a junior subjective synonym of *Apatetris* Staudinger, 1879 (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 18, 63).

DAEMONARCHA Meyrick, 1918, *Ann. Transv. Mus.* **6** : 27.
Type-species: ***Daemonarcha cyprophanes*** Meyrick, 1918, *ibid.* **6** : 27, by monotypy.
Originally described in the Metachandidae; subsequently transferred to the Gelechiadae [= Gelechiidae] (Janse, 1954, *Moths S. Afr.* **5** : 435).

DARLIA Clarke, 1950, *J. Wash. Acad. Sci.* **40** : 288.
Type-species: ***Darlia praetexta*** Clarke, 1950, *ibid.* **40** : 288, figs 2, 6, by original designation and monotypy.

DECATOPSEUSTIS Meyrick, 1925, *Genera Insect.* **184** : 15 [key], 20 [key], 140.
Type-species: ***Gelechia xanthastis*** Lower, 1896, *Trans. R. Soc. S. Aust.* **20** : 168, by original designation and monotypy.

DECTOBATHRA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 256 [key], 299.
Type-species: ***Dectobathra choristis*** Meyrick, 1904, *ibid.* **29** : 299 [key], 300, by original designation.
Junior subjective synonym of *Helcystogramma* Zeller, 1877 (Meyrick, 1918, *Exot. Microlepidopt.* **2** : 145); currently considered to be a junior subjective synonym of *Onebala* Walker, 1864 (Meyrick, 1925, *Genera Insect.* **184** : 137).

DECUARIA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 797.
Type-species: ***Decuaria mendicella*** Walker, 1864, *ibid.* **29** : 797, by monotypy.

Originally described in the Gelechi[i]dae; currently considered to be a junior subjective synonym of *Timyra* Walker, 1864 (Meyrick, 1925, *Genera Insect.* **184** : 209), which automatically places the genus in the Lecithoceridae.

DEIMNESTRA Meyrick, 1918, *Exot. Microlepidopt.* **2** : 150.
Type-species: ***Hypelictis thyrsicola*** Meyrick, 1913, *J. Bombay nat. Hist. Soc.* **22** : 171, by original designation.

DELTOLOPHOS Janse, 1960, *Moths S. Afr.* **6** : 204.
Type-species: ***Deltolophos haplopa*** Janse, 1960, *ibid.* **6** : 204, figs, by original designation and monotypy.

DELTOPHORA Janse, 1950, *Moths S. Afr.* **5** : 121.
Type-species: ***Xenolechia peltosema*** Lower, 1900, *Proc. Linn. Soc. N.S.W.* **25** : 50, by original designation and monotypy.

*****DELTOPLASTIS*** Meyrick, 1925, *Genera Insect.* **184** : 5 [key], 228.
Type-species: ***Onebala ocreata*** Meyrick, 1910, *J. Bombay nat. Hist. Soc.* **20** : 451, by original designation.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

DEMIOPHILA Meyrick, 1906, *J. Bombay nat. Hist. Soc.* **17** : 152.
Type-species: ***Demiophila psaphara*** Meyrick, 1906, *ibid.* **17** : 152, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20); currently placed in the Gelechiidae (Clarke, 1969, *ibid.* **7** : 7).

*****DEMOPRACTIS*** Meyrick, 1918 (May), *Exot. Microlepidopt.* **2** : 154.
Type-species: ***Demopractis tonaea*** Meyrick, 1918, *ibid.* **2** : 154, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; currently considered to be a junior subjective synonym of *Crocogma* Meyrick, 1918 (April) (Meyrick, 1925, *Genera Insect.* **184** : 219), which automatically places the genus in the Lecithoceridae. *D. tonaea* Meyrick, 1918 (May), is currently considered to be a junior subjective synonym of *Crocogma isocola* Meyrick, 1918 (April), the type-species of *Crocogma* Meyrick, 1918 (Meyrick, 1925, *Genera Insect.* **184** : 219).

‡*DEOCLANA* Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 184.
Incorrect subsequent spelling of *Deoclona* Busck, 1903.

DEOCLONA Busck, 1903, *Proc. U.S. natn. Mus.* **25** : 837.
Type-species: ***Deoclona yuccasella*** Busck, 1903, *ibid.* **25** : 837, pl. 30, fig. 24, by original designation and monotypy.
‡*Deoclona* Busck, [1903, January 13th], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 504, nomen nudum, not accompanied by a description or indication, the included nominal species a nomen nudum.
See also: ‡ *Deoclana* Fletcher, 1929; *Proclesis* Walsingham, 1911.

DEROXENA Meyrick, 1913, *Exot. Microlepidopt.* **1** : 153.
Type-species: ***Depressaria venosulella*** Möschler, 1862, *Wien. ent. Mschr.* **6** : 142, pl. 1, fig. 15, by original designation and monotypy.

DESMAUCHA Meyrick, 1918, *Exot. Microlepidopt.* **2** : 146.
Type-species: ***Desmaucha chrysostoma*** Meyrick, 1918, *ibid.* **2** : 147, by monotypy.
Currently considered to be a junior subjective synonym of *Pavolechia* Busck, 1914 (Busck, 1940, *Bull. Sth. Calif. Acad. Sci.* **39** : 90). *D. chrysostoma* Meyrick, 1918, is currently considered to be a junior subjective synonym of *Pavolechia argentea* Busck, 1914, the type-species of *Pavolechia* Busck, 1914 (Busck, 1940, *ibid.* **39** : 90).

DESMOPHYLAX Meyrick, 1935, *Exot. Microlepidopt.* **4** : 588.
Type-species: ***Desmophylax barymochla*** Meyrick, 1935, *ibid.* **4** : 588, by monotypy.

***DEUTEROGONIA** Rebel, 1901, *in* Staudinger & Rebel, *Cat. Lepid. palaearctischen Faunengebietes* **2** : 158 (objective replacement name for *Gonia* Heinemann, 1870, nom. praeocc.).

Type-species: ***Gelechia pudorina*** Wocke, 1857, *Z. Ent. Breslau* **10** (Lepid.) : 5, by monotypy of *Gonia* Heinemann, 1870.

Originally proposed in the Gelechiidae: Gelechiinae; subsequently included in the Gelechiidae: Oecophorinae [= Oecophoridae] by Spuler, 1910, *Schmett. Eur.* **2** : 349, who at the same time (in a footnote) proposed for it the subfamily Deuterogoniinae.

DEUTEROPTILA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 258 [key], 418.

Type-species: ***Deuteroptila sphenophora*** Meyrick, 1904, *ibid.* **29** : 419, by monotypy.

Junior subjective synonym of *Chelaria* Haworth, 1828 (Meyrick, 1925, *Genera Insect.* **184** : 155); currently considered to be a junior subjective synonym of *Hypatima* Hübner, [1825] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 66, 113).

***DIASCEPSIS** Durrant, 1915, *Rep. B.O.U. Exped. Dutch New Guinea* **2** (15) : 150.

Type-species: ***Diascepsis fascinata*** Durrant, 1915, *ibid.* **2** (15) : 151, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Schreckensteiniadae [= Heliodinidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 67).

DIASTALTICA Walsingham, 1910, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 32.

Type-species: ***Diastaltica separabilis*** Walsingham, 1910, *ibid.* **4** : 33, fig. 11, pl. 1, fig. 29, by original designation and monotypy.

‡*DICHANUCHA* Janse, 1954, *Moths S. Afr.* **5** : 461 [index, under *crateropis*].

Incorrect (multiple) original spelling of *Dicranucha* Janse, 1954. There is clear evidence in the original publication that the spelling ‡*Dichanucha* is an inadvertent error. ‡*Dichanucha* is used only once in the index under *crateropis*, while *Dicranucha* is used more than 10 times on pp. 320–328 as well as in the index.

DICHOMERIS Hübner, 1818, *Zutr. Samml. exot. Schmett.* **1** : 25.

Type-species: ***Dichomeris ligulella*** Hübner, 1818, *ibid.* **1** : 25, pl. [25], figs 143, 144, by subsequent designation: Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 87.

See also: *Anorthosia* Clemens, 1860; *Begoe* Chambers, 1872; *Brochometis* Meyrick, 1923; *Carna* Walker, 1864; ‡*Elasmion* Hübner, [1808]; *Eurysara* Turner, 1919; *Euryzancla* Turner, 1919; *Macrozancla* Turner, 1919; *Malacotricha* Zeller, 1873; *Oxybelia* Hübner, [1825]; *Rhinosia* Treitschke, 1833; *Rhobonda* Walker, 1864; *Sagaritis* Chambers, 1872.

DICRANOSES Kieffer & Jörgensen, 1910, *Zentbl. Bakt. ParasitKde*, (2. Abt.) **27** : 385.

Type-species: ***Dicranoses capsulifex*** Kieffer & Jörgensen, 1910, *ibid.* **27** : 385, figs 14–16, by monotypy.

Originally not placed in a family; subsequently included in the Gelechiidae (Lima, 1945, *Insetos Brasil* **5** : 274). The family association is uncertain; the fore wing venation is hardly that of a Gelechiid.

DICRANUCHA Janse, 1954, *Moths S. Afr.* **5** : 320, 461 [index, ‡*Dichanucha*, incorrect (multiple) original spelling].

Type-species: ***Brachmia sterictis*** Meyrick, 1908, *Proc. zool. Soc. Lond.* **1908** : 727, by original designation.

There is clear evidence in the original publication that the spelling ‡*Dichanucha* is an inadvertent error. ‡*Dichanucha* is used only once in the index under *crateropis*, while *Dicranucha* is used more than 10 times on pp. 320–328 as well as in the index.

See also: ‡*Dichanucha* Janse, 1954.

DIDACTYLOTA Walsingham, 1892, *Proc. zool. Soc. Lond.* **1891** : 522 (objective replacement name for *Dactylota* Snellen, 1876, nom. praeocc.).

Type-species: *Dactylota kinkerella* Snellen, 1876, *Tijdschr. Ent.* **19** : 23, pl. 1, fig., by monotypy of *Dactylota* Snellen, 1876.

Correct date of publication (1892, April 1st) taken from original wrapper.

Unnecessary replacement name for *Dactylota* Snellen, 1876, which has been replaced by *Dactylotula* Cockerell, 1888 (objective replacement name). Junior subjective synonym of *Epiphthora* Meyrick, 1888 (Meyrick, 1911, *Ann. Transv. Mus.* **2** : 229); currently considered to be a junioı subjective synonym of *Apatetris* Staudinger, 1879 (Meyrick, 1918, *Exot. Microlepidopt.* **2** : 117).

***DINOCHARES** Meyrick, 1925, *Genera Insect.* **184** : 4 [key], 205.

Type-species: ***Tingentera conotoma*** Meyrick, 1908, *J. Bombay nat. Hist. Soc.* **18** : 453, by original designation and monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

***DIOCOSMA** Meyrick, 1909, *Ann. S. Afr. Mus.* **5** : 352.

Type-species: ***Diocosma callichroa*** Meyrick, 1909, *ibid.* **5** : 353, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Oecophoridae (Meyrick, 1922, *Genera Insect.* **180** : 157).

***DIPLOSARA** Meyrick, 1883, *Entomologist's mon. Mag.* **20** : 35.

Type-species: ***Scardia lignivora*** Butler, 1879, *ibid.* **15** : 273, by monotypy.

Originally described in the Gelech[i]idae; subsequently transferred to the Diplosaridae [= Cosmopterigidae] (Meyrick, 1915, *Exot. Microlepidopt.* **1** : 339).

DIPROTOCHAETA Diakonoff, 1941, *Treubia* **18** : 195.

Type-species: ***Diprotochaeta fallax*** Diakonoff, 1941, *ibid.* **18** : 195, figs 1 B, C, 3, pl. 5, fig. 3, by original designation and monotypy.

DIRHINOSIA Rebel, 1905, *Annln naturh. Mus. Wien* **20** : 212.

Type-species: ***Dirhinosia trifasciella*** Rebel, 1905, *ibid.* **20** : 212, by original designation.

DISSOPTILA Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 234.

Type-species: ***Dissoptila mutabilis*** Meyrick, 1914, *ibid.* **1914** : 235, by original designation.

DISTINXIA Povolný, 1967, *Acta ent. Mus. natn. Pragae* **37** : 156.

Type-species: ***Vladimirea* (*Distinxia*) *amseli*** Povolný, 1967, *ibid.* **37** : 157, figs 19, 20, by monotypy.

Originally proposed as a subgenus of *Vladimirea* Povolný, 1967.

DOLEROTRICHA Meyrick, 1925, *Genera Insect.* **184** : 18 [key], 154.

Type-species: ***Nothris flabellifer*** Rebel, 1896, *Verh. zool.-bot. Ges. Wien* **46** : 175, by original designation and monotypy.

The type-species was cited by Meyrick as '*D. flabellifera* Rebel'.

***DOLICHOTORNA** Meyrick, 1910, *J. Bombay nat. Hist. Soc.* **20** : 438.

Type-species: ***Dolichotorna tholias*** Meyrick, 1910, *ibid.* **20** : 439 [as ‡*hotlias*, incorrect original spelling], by monotypy.

The incorrect original spelling ‡*hotlias* is an inadvertent error, which was corrected to *tholias* (justified emendation) in a later part of the original publication (Meyrick, 1911, *ibid.* **20** : 736).

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

***DOLIDIRIA** Busck, 1912, *Smithson. misc. Collns* **59** (4) : 5.

Type-species: ***Dolidiria arcanella*** Busck, 1912, *ibid.* **59** (4) : 5, by original designation and monotypy.

Currently considered to be a junior subjective synonym of *Peleopoda* Zeller, 1877, *Horae Soc. ent. ross.* **13** : 385, type-species: *Peleopoda lobitarsis* Zeller, 1877, *ibid.* **13** : 387, by monotypy (Duckworth, 1970, *Smithson. Contr. Zool.* **48** : 3).

Originally described in the Gelechiidae; subsequently included in the Xyloryctidae (Meyrick, 1925, *Exot. Microlepidopt.* **3** : 161); currently placed in the Oecophoridae (Duckworth, 1970, *Smithson. Contr. Zool.* **48** : 3).

DONASPASTUS Gozmány, 1952, *Annls hist.-nat. Mus. natn. hung.*, S.N. **2** : 141.
Type-species: ***Donaspastus pannonicus*** Gozmány, 1952, *ibid.* **2** : 142, figs 1, 2, by original designation.
Originally described in the Gelechiidae; subsequently included in the Gelechiidae: Symmocinae (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 339); currently placed in the Symmocidae.

DORYCNOPA Lower, 1901, *Trans. R. Soc. S. Aust.* **25** : 77.
Type-species: ***Dorycnopa acroxantha*** Lower, 1901, *ibid.* **25** : 78, by monotypy.
D. acroxantha Lower, 1901, is currently considered to be a junior subjective synonym of *Gelechia heliochares* Lower, 1900, *Proc. Linn. Soc. N.S.W.* **25** : 417 (Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 270).
See also: *Bactrolopha* Lower, 1901.

DORYPHORA Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 298 (nom. praeocc.).
Type-species: *Anacampsis pulveratella* Herrich-Schäffer, 1854, *Syst. Bearb. Schmett. Eur.* **5** : 199; 1853, *ibid.* **5**, pl. 73, fig. 552 [non-binominal], by subsequent designation: Walsingham, 1909, *Biologia cent.-am.*, *Zool.*, Lepid.-Heterocera **4** : 22.
Doryphora Heinemann, 1870, is a junior homonym of *Doryphora* Illiger, 1807 (Coleoptera); *Xystophora* Wocke, [1876], and *Doryphorella* Cockerell, 1888, were proposed as objective replacement names. Junior subjective synonym of *Aristotelia* Hübner, [1825] (Walsingham, 1907, *Fauna hawaii.* **1**(5) : 478).

DORYPHORELLA Cockerell, 1888, *Entomologist* **21** : 163 (objective replacement name for *Doryphora* Heinemann, 1870, nom. praeocc.).
Type-species: *Anacampsis pulveratella* Herrich-Schäffer, 1854, *Syst. Bearb. Schmett. Eur.* **5** : 199; 1853, *ibid.* **5**, pl. 73, fig. 552 [non-binominal], by subsequent designation for *Doryphora* Heinemann, 1870: Walsingham, 1909, *Biologia cent.-am.*, *Zool.*, Lepid.-Heterocera **4** : 22.
Unnecessary replacement name for *Doryphora* Heinemann, 1870, nom. praeocc., which had earlier been replaced by *Xystophora* Wocke, [1876] (objective replacement name). Junior subjective synonym of *Aristotelia* Hübner, [1825] (Walsingham, 1915, *Biologia cent.-am.*, *Zool.*, Lepid.-Heterocera **4** : 407).

DOXOGENES Meyrick, 1925, *Genera Insect.* **184** : 3 [key], 205.
Type-species: ***Tipha brochias*** Meyrick, 1905, *J. Bombay nat. Hist. Soc.* **16** : 594, by original designation.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

*‡*DRACHMATUCHA* Janse, 1954, *Moths S. Afr.*, **5**, legend to pl. 173, fig. 2 and pl. 165, fig. 4.
Incorrect subsequent spelling of *Dragmatucha* Meyrick, 1908.

DRAGMATUCHA Meyrick, 1908, *Proc. zool. Soc. Lond.* **1908** : 726.
Type-species: ***Dragmatucha proaula*** Meyrick, 1908, *ibid.* **1908** : 726, by monotypy.
Junior subjective synonym of *Idiopteryx* Walsingham, 1891 (Meyrick, 1925, *Genera Insect.* **184** : 227); currently considered to be a valid genus (Janse, 1954, *Moths S. Afr.* **5** : 380).
Originally described in the Gelechiadae [= Gelechiidae]; here transferred to the Lecithoceridae.
See also: ‡*Drachmatucha* Janse, 1954.

DREPANOTERMA Walsingham, 1897, *Proc. zool. Soc. Lond.* **1897** : 84.
Type-species: ***Drepanoterma lacticaudellum*** Walsingham, 1897, *ibid.* **1897** : 85, by original designation and monotypy.

*__*DURRANTIA*__ Busck, 1908, *Proc. U.S. natn. Mus.* **35** : 197.

Type-species: ***Cryptolechia piperatella*** Zeller, 1873, *Verh. zool.-bot. Ges. Wien.* **23** : 239, by original designation and monotypy.

Currently considered to be a junior subjective synonym of *Peleopoda* Zeller, 1877, *Horae Soc. ent. ross.* **13** : 385, type-species: *Peleopoda lobitarsis* Zeller, 1877, *ibid.* **13** : 387, by monotypy (Duckworth, 1970, *Smithson. Contr. Zool.* **48** : 3).

Originally described in the Gelechiidae; subsequently included in the Xyloryctidae (Meyrick, 1925, *Exot. Microlepidopt.* **3** : 161); currently placed in the Oecophoridae (Duckworth, 1970, *Smithson. Contr. Zool.* **48** : 3).

DUVITA Busck, 1916, *Proc. ent. Soc. Wash.* **18** : 147.

Type-species: ***Duvita vittella*** Busck, 1916, *ibid.* **18** : 147, by original designation.

Currently considered to be a junior subjective synonym of *Battaristis* Meyrick, 1914 (Meyrick, 1925, *Genera Insect.* **184** : 117).

*__*DYSSPASTUS*__ Gozmány, 1964, *Acta zool. hung.* **10** : 128.

Type-species: ***Symmocoides similis*** Amsel, 1939, *Memorie Soc. ent. ital.* **17** : 74, fig. 3, by original designation.

Originally described and currently placed in the Symmocidae.

ECHINOGLOSSA Clarke, 1965, *Proc. U.S. natn. Mus.* **117** : 85.

Type-species: ***Echinoglossa trinota*** Clarke, 1965, *ibid.* **117** : 85, figs 85–88, by original designation and monotypy.

Currently considered to be a junior subjective synonym of *Ephysteris* Meyrick, 1908 (Povolný, 1967, *Acta ent. Mus. natn. Pragae* **37** : 126).

EIDOTHEA Chambers, 1873, *Can. Ent.* **5** : 186, 229 (nom. praeocc.).

Type-species: *Eidothea vagatioella* Chambers, 1873, *ibid.* **5** : 187, by monotypy.

The incorrect original spelling ‡*Eidothoa* Chambers, 1873, *ibid.* **5** : 186, was emended to *Eidothea* (justified emendation) by Chambers, 1873, *ibid.* **5** : 229.

Eidothea Chambers, 1873, is a junior homonym of *Eidothea* Risso, 1826 (Mollusca). Junior subjective synonym of *Recurvaria* Haworth, 1828 (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 500); currently considered to be a senior subjective synonym of *Coleotechnites* Chambers, 1880, which is used as the subjective replacement name (Hodges, 1965, *Ent. News* **76** : 263). The synonymy of the type-species must be reversed. *E. vagatioella* Chambers, 1873 (October), **nom. rev.**, is here considered to be the senior subjective synonym of *Gelechia* (*Teleia*) *dorsivittella* Zeller, 1873 (December), *Verh. zool.-bot. Ges. Wien* **23** : 267, pl. 3, fig. 20, **syn. n.** This synonymy was first established by Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 501, who, followed by subsequent authors, erroneously placed *vagatioella* as the junior name.

‡*EIDOTHOA* Chambers, 1873, *Can. Ent.* **5** : 186.

Incorrect original spelling of *Eidothea* Chambers, 1873. The incorrect original spelling ‡*Eidothoa* Chambers, 1873, was emended to *Eidothea* (justified emendation) by Chambers, 1873, *ibid.* **5** : 229.

ELACHYPTERYX* Turner, 1919, *Proc. R. Soc. Qd* **31 : 128 (nom. praeocc.).

Type-species: *Elachypteryx suffusca* Turner, 1919, *ibid.* **31** : 128, by original designation.

Correct date of publication (1919, December 30th) taken from original wrapper.

Elachypteryx Turner, 1919, is a junior homonym of *Elachypteryx* Turner, 1908 (Lepidoptera: Pyralidae). Currently considered to be a junior subjective synonym of *Pholeutis* Meyrick, 1906, *Trans. R. Soc. S. Aust.* **30** : 49 (Meyrick, 1922, *Genera Insect.* **180** : 150). *E. suffusca* Turner, 1919, is currently considered to be a junior subjective synonym of *Pholeutis neolecta* Meyrick, 1906, *Trans. R. Soc. S. Aust.* **30** : 50 (Meyrick, 1922, *Genera Insect.* **180** : 150).

Originally described in the Gelechianae [= Gelechiidae]; subsequently transferred to the Oecophoridae (Meyrick, 1922, *Genera Insect.* **180** : 150).

ELASIPRORA Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 230.

Type-species: ***Elasiprora rostrifera*** Meyrick, 1914, *ibid.* **1914** : 231, by monotypy.

‡*ELASMION* Hübner, [1808], *Erste Zuträge Samml. exot. Schmett.* : 6.

Only included species: ‡*Elasmion ligulella* Hübner, [1808], *ibid.* : 6, nomen nudum; subsequently made nomenclaturally available as *Dichomeris ligulella* Hübner, 1818, *Zutr. Samml. exot. Schmett.* **1** : 25, pl. [25], figs 143, 144.

Included in a work rejected for nomenclatural purposes by the International Commission on Zoological Nomenclature, 1966, Opinion 789, *Bull. zool. Nom.* **23** : 213–220.

Placed on the *Official Index of rejected and invalid generic Names in Zoology* as name no. 1836.

EMMETROPHYSIS Diakonoff, 1954, *Verh. K. ned. Akad. Wet.* (2)**50**(1) : 8.

Type-species: ***Emmetrophysis lanceolata*** Diakonoff, 1954, *ibid.* (2)**50**(1) : 9, figs 552, 556, by original designation and monotypy.

EMPALACTIS Meyrick, 1925, *Genera Insect.* **184** : 18 [key], 170.

Type-species: ***Nothris sporogramma*** Meyrick, 1921, *Exot. Microlepidopt.* **2** : 433, by original designation and monotypy.

EMPEDAULA Meyrick, 1918, *Exot. Microlepidopt.* **2** : 148.

Type-species: ***Empedaula insipiens*** Meyrick, 1918, *ibid.* **2** : 149, by monotypy.

EMPISTA Povolný, 1968, *Khumbu Himal.* **3** : 116.

Type-species: ***Empista palaearctica*** Povolný, 1968, *ibid.* **3** : 117, figs 1–3, by monotypy.

ENCENTROTIS Meyrick, 1921, *Ann. Transv. Mus.* **8** : 65.

Type-species: ***Encentrotis catagrapha*** Meyrick, 1921, *ibid.* **8** : 65, by monotypy.

ENCHRYSA Zeller, 1873, *Verh. zool.-bot. Ges. Wien* **23** : 282.

Type-species: ***Enchrysa dissectella*** Zeller, 1873, *ibid.* **23** : 283, pl. 4, figs 29 a, b, by monotypy.

Currently considered to be a junior subjective synonym of *Aristotelia* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 41).

See also: ‡*Euchrysa* Fletcher, 1929.

ENCOLAPTA Meyrick, 1913, *J. Bombay nat. Hist. Soc.* **22** : 167.

Type-species: ***Encolapta metorcha*** Meyrick, 1913, *ibid.* **22** : 167, by monotypy.

ENCOLPOTIS Meyrick, 1909, *Ann. S. Afr. Mus.* **5** : 352.

Type-species: ***Encolpotis xanthoria*** Meyrick, 1909, *ibid.* **5** : 352, by monotypy.

ENCRASIMA Meyrick, 1916, *Exot. Microlepidopt.* **1** : 594.

Type-species: ***Encrasima reversa*** Meyrick, 1916, *ibid.* **1** : 594, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20); currently placed in the Gelechiidae (Clarke, 1969, *ibid.* **7** : 56).

****ENERGIA*** Walsingham, 1912, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 113.

Type-species: ***Energia subversa*** Walsingham, 1912, *ibid.* **4** : 113, fig. 24, by original designation.

Junior subjective synonym of *Antaeotricha* Zeller, 1854 (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 15, 77); currently considered to be a valid genus (Busck, 1935, *Lepid. Cat.* **67** : 14).

Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Cryptophasidae [= Xyloryctidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 15, 77); currently placed in the Stenomidae (Busck, 1935, *Lepid. Cat.* **67** : 14).

****ENOLMIS*** Duponchel, [1845], *Cat. méthod. Lépid. Eur.* : 340.

Type-species: ***Yponomeuta acanthella*** Godart, 1824, *Hist. nat. Lépid. Papillons Fr.* **5** : 38, pl. 44, fig. 4, by subsequent designation: Desmarest, (1857), *in* Chenu, *Encycl. Hist. nat.*, Papillons nocturnes : 273, 274.

Originally described in the Tineidae; erroneously used in the Gelechiidae as the subjective replacement name for *Euteles* Heinemann, 1870, nom. praeocc. (Lhomme, [1949], *Cat. Lépid. Fr. Belg.* **2** : 783); currently placed in the Scythrididae.

***ENTHETICA** Meyrick, 1916, *Exot. Microlepidopt.* **1** : 574.
Type-species: ***Enthetica picryntis*** Meyrick, 1916, *ibid.* **1** : 574, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

***EPANASTASIS** Walsingham, 1908, *Proc. zool. Soc. Lond.* **1907** : 948.
Type-species: ***Holcopogon sophroniellus*** Rebel, 1894, *in* Rebel & Rogenhofer, *Annln naturh. Mus. Wien* **9** : 89, by original designation and monotypy.
Correct date of publication (1908, June 4th) taken from 'Notice' on the back cover of the Proceedings for 1908 (part 1).
Junior subjective synonym of *Chersogenes* Walsingham, 1908 (Meyrick, 1925, *Genera Insect.* **184** : 202); currently considered to be a valid genus (Gozmány, 1964, *Acta zool. hung.* **10** : 118).
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Symmocidae (Gozmány, 1964, *Acta zool. hung.* **10** : 118).
See also: ‡*Epanastis* Meyrick, 1925; *Thanatovena* Gozmány, 1957.

‡*EPANASTIS* Meyrick, 1925, *Genera Insect.* **184** : 268 [index].
Incorrect subsequent spelling of *Epanastasis* Walsingham, 1908.

***EPHARMONIA** Meyrick, 1925, *Genera Insect.* **184** : 5 [key], 226.
Type-species: ***Onebala ardua*** Meyrick, 1910, *J. Bombay nat. Hist. Soc.* **20** : 458, by original designation.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

EPHELICTIS Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 258 [key], 387.
Type-species: ***Ephelictis neochalca*** Meyrick, 1904, *ibid.* **29** : 388, by original designation.

‡*EPHYSTERERIS* Janse, 1960, *Moths S. Afr.* **6**, legend to pl. 63, fig. e.
Incorrect subsequent spelling of *Ephysteris* Meyrick, 1908.

EPHYSTERIS Meyrick, 1908, *Proc. zool. Soc. Lond.* **1908** : 724.
Type-species: ***Ephysteris chersaea*** Meyrick, 1908, *ibid.* **1908** : 725, by monotypy.
E. chersaea Meyrick, 1908, is currently considered to be a junior subjective synonym of *Gelechia promptella* Staudinger, 1859, *Stettin. ent. Ztg* **20** : 241 (Povolný, 1964, *Čas. ceské Spol. ent.* **61** : 57).
See also: *Echinoglossa* Clarke, 1965; ‡*Ephystereris* Janse, 1960; *Microcraspedus* Janse, 1958; *Ochrodia* Povolný, 1966; *Opacopsis* Povolný, 1966.

EPIBRONTIS Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 258 [key], 324.
Type-species: ***Gelechia hemichlaena*** Lower, 1897, *Trans. R. Soc. S. Aust.* **21** : 55, by monotypy.
The type-species was included by Meyrick as '*E. hemichlaema*, Low.' and '*Gelechia hemiclaema*, Low.'; both are incorrect subsequent spellings of *hemichlaena*.

EPICHARMA Walsingham, 1897, *Trans. ent. Soc. Lond.* **1897** : 38.
Type-species: ***Epicharma nothriforme*** Walsingham, 1897, *ibid.* **1897** : 39, pl. 2, fig. 3, by original designation and monotypy.
Currently considered to be a junior subjective synonym of *Autosticha* Meyrick, 1886 (Meyrick, 1925, *Genera Insect.* **184** : 256).

EPICHARTA Meyrick, 1926, *Exot. Microlepidopt.* **3** : 285.
Type-species: ***Epicharta gnomonodes*** Meyrick, 1926, *ibid.* **3** : 285, by monotypy.

EPICOENIA Meyrick, 1906, *J. Bombay nat. Hist. Soc.* **17** : 140.
Type-species: ***Epicoenia chernetis*** Meyrick, 1906, *ibid.* **17** : 141, by original designation.
Junior subjective synonym of *Autosticha* Meyrick, 1886 (Meyrick, 1908, *J. Bombay nat. Hist. Soc.* **18** : 455); currently considered to be a valid genus (Clarke, 1969, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **7** : 60).

EPICORTHYLIS Zeller, 1873, *Verh. zool.-bot. Ges. Wien* **23** : 248.

Type-species: ***Epicorthylis inversella*** Zeller, 1873, *ibid.* **23** : 248, pl. 3, figs 13 a, b, by monotypy.

Junior subjective synonym of *Trichotaphe* Clemens, 1860 (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 505); currently considered to be a junior subjective synonym of *Dichomeris* Hübner, 1818 (Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 87).

*__*EPIDIOPTERYX*__* Rebel, 1916, *in* Rebel & Zerny, *Wiss. Ergebn. . . . zool. Exped. . . . Sudan (Kordofan)* 1914, Lepid. : 21.

Type-species: ***Epidiopteryx bipunctella*** Rebel, 1916, *ibid.* : 21, pl., fig. 3, by monotypy.

The paper by Rebel & Zerny was issued as a separate with independent pagination (1–24) and date (dated 1916 on the original wrapper) prior to its publication in the *Denkschr.* (1917, *Denkschr. Akad. Wiss. Wien* **93** : 423–446).

Incorrect type-species: *Gelechia pubescentella* Stainton, 1859, *Trans. ent. Soc. Lond.*, N.S. **5** : 117, designated by Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 81. *G. pubescentella* Stainton, 1859, is not one of the originally included nominal species and therefore not eligible as the type-species. Fletcher intended to synonymize *E. bipunctella* Rebel, 1916, with *G. pubescentella* Stainton, 1859, as can be seen from his card index in the British Museum (Natural History), however, in his paper the name *bipunctella* was inadvertently omitted.

Fletcher, 1929, *ibid.* **11** : 81, 209, placed *Epidiopteryx* Rebel, 1916, as a junior subjective synonym of *Stenoma* Zeller, 1839, which he included in the Cryptophasidae [= Xyloryctidae]. *Epidiopteryx* Rebel, 1916, **gen. rev.**, and *E. bipunctella* Rebel, 1916, are here retained as a valid genus and species in the Xyloryctidae.

Originally described in the Gelechiidae; subsequently transferred to the Cryptophasidae [= Xyloryctidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 81, 209).

EPIDOLA Staudinger, 1859, *Stettin. ent. Ztg* **20** : 243.

Type-species: ***Epidola stigma*** Staudinger, 1859, *ibid.* **20** : 244, by monotypy.

Originally not placed in a family; subsequently included in the Gelechi[i]dae (Wocke, 1861, *in* Staudinger & Wocke, *Cat. Lepid. Eur.* : 115); Scythrididae (Amsel, 1942, *Veröff. dt. Kolon. u. Übersee-Mus. Bremen* **3** : 217); currently placed in the Gelechiidae.

EPILECHIA Busck, 1939, *Proc. U.S. natn. Mus.* **86** : 568 [keys], 580.

Type-species: ***Gelechia catalinella*** Busck, 1907, *Jl N.Y. ent. Soc.* **15** : 136, by original designation and monotypy.

EPIMESOPHLEPS Rebel, 1907, *Lepid. Südarabien u. Insel Sokótra* : 95.

Type-species: ***Epimesophleps symmocella*** Rebel, 1907, *ibid.* : 95, fig. 40, by monotypy.

The paper by Rebel was issued as a separate with independent pagination (1–100) and date (dated 1907 on the original wrapper) prior to its publication in the *Denkschr.* (1931, *Denkschr. Akad. Wiss. Wien* **71**(2) : 31–130).

EPIMIMASTIS Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 258 [key], 325.

Type-species: ***Gelechia porphyroloma*** Lower, 1897, *ibid.* **22** : 22, by monotypy.

EPIPARASIA Rebel, 1914, *Dt. ent. Z. Iris* **28** : 276.

Type-species: ***Epiparasia longivitella*** Rebel, 1914, *ibid.* **28** : 276, by monotypy.

E. longivitella Rebel, 1914, is currently considered to be a junior subjective synonym of *Anacampsis incertella* Herrich-Schäffer, 1861, *Neue Schmett. Eur. angrenzenden Ländern* : 31 pl. [23], fig. 156 (Caradja, 1920, *Dt. ent. Z. Iris* **34** : 94).

EPIPHTHORA Meyrick, 1888, *Trans. N.Z. Inst.* **20** : 77.

Type-species: ***Epiphthora melanombra*** Meyrick, 1888, *ibid.* **20** : 77, by monotypy.

Junior subjective synonym of *Apatetris* Staudinger, 1879 (Meyrick, 1918, *Exot. Microlepidopt.* **2** : 117); currently considered to be a valid genus (Janse, 1951, *Moths S. Afr.* **5** : 232).

See also: *Didactylota* Walsingham, 1892; *Proactica* Walsingham, 1904.

EPISACTA Turner, 1919, *Proc. R. Soc. Qd* **31** : 161.

Type-species: ***Chelaria discissa*** Meyrick, 1916, *Exot. Microlepidopt.* **1** : 581, by original designation.

Correct date of publication (1919, December 30th) taken from original wrapper.

Junior subjective synonym of *Chelaria* Haworth, 1828 (Meyrick, 1925, *Genera Insect.* **184** : 155); currently considered to be a junior subjective synonym of *Hypatima* Hübner, [1805] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 82, 113).

EPISTOMOTIS Meyrick, 1906, *J. Bombay nat. Hist. Soc.* **17** : 416.

Type-species: ***Epistomotis penessa*** Meyrick, 1906, *ibid.* **17** : 416, by monotypy.

Currently considered to be a junior subjective synonym of *Holcopogon* Staudinger, 1879 (Meyrick, 1925, *Genera Insect.* **184** : 199). *E. penessa* Meyrick, 1906, is currently considered to be a junior subjective synonym of *Ypsolophus robustus* Butler, 1883, *Proc. zool. Soc. Lond.* **1883** : 174 (Meyrick, 1925, *Genera Insect.* **184** : 199).

Originally described in the Plutellidae; subsequently transferred to the Gelechiadae [= Gelechiidae] (Meyrick, 1925, *Genera Insect.* **184** : 199).

EPITHECTIS Meyrick, 1895, *Handb. Br. Lepid.* : 580.

Type-species: ***Gelechia lathyri*** Stainton, 1865, *Entomologist's Annu.* **1865** : 130, pl., fig. 1, by subsequent designation: Walsingham, 1910, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 47.

Junior subjective synonym of *Taygete* Chambers, 1873 (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 82, 216); currently considered to be a junior subjective synonym of *Rhynchopacha* Staudinger, 1871 (Sattler, 1968, *Dt. ent. Z.*, N.F. **15** : 111). *G. lathyri* Stainton, 1865, is currently considered to be a junior subjective synonym of *Tinea tetrapunctella* Thunberg, 1794, *D. D. Dissertatio ent. sistens Insecta svecica* **7** : 96 (Benander, 1946, *Opusc. ent.* **11** : 38, 77.

EPORGASTIS Meyrick, 1921, *Ann. Transv. Mus.* **8** : 81.

Type-species: ***Eporgastis maturata*** Meyrick, 1921, *ibid.* **8** : 82, by original designation.

EREBOSCAEAS Meyrick, 1937, *Exot. Microlepidopt.* **5** : 93.

Type-species: ***Ereboscaeas amorpha*** Meyrick, 1937, *ibid.* **5** : 93, by monotypy.

****EREMICA*** Walsingham, 1904, *Entomologist's mon. Mag.* **40** : 270.

Type-species: ***Eremica saharae*** Walsingham, 1904, *ibid.* **40** : 270, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Gelechiidae: Symmocinae (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 335); currently placed in the Symmocidae.

See also: *Pantacordis* Gozmány, 1953.

****EREMICAMIMA*** Gozmány, 1964, *Acta zool. hung.* **10** : 104.

Type-species: ***Symmoca cedestiella*** Zeller, 1868, *Stettin. ent. Ztg* **29** : 140, by original designation.

Originally described and currently placed in the Symmocidae.

****EREMICAMURA*** Gozmány, 1962, *Opusc. zool. Münch.* **64** : 5.

Type-species: ***Eremicamura mercuriata*** Gozmány, 1962, *ibid.* **64** : 5, figs 4, 5, by original designation and monotypy.

Originally described in the Gelechiidae: Symmocinae; currently placed in the Symmocidae.

ERGASIOLA Povolný, 1967, *Přirodov. Pr. Cesk. Akad. Vêd.*, N.S. **1** : 232.

Type-species: ***Phthorimaea ergasima*** Meyrick, 1916, *Exot. Microlepidopt.* **1** : 568, by original designation and monotypy.

Originally proposed as a subgenus of *Scrobipalpa* Janse, 1951.

ERGATIS Heinemann, 1870, *Schmett. Dtl. Schweiz,* (2)**2**(1) : 295 (nom. praeocc.).

Type-species: *Oecophora brizella* Treitschke, 1833, *Schmett. Eur.* **9**(2) : 173, by subsequent designation: Walsingham, 1909, *Biologia cent.-am., Zool*, Lepid.-Heterocera **4** : 22.

Ergatis Heinemann, 1870, is a junior homonym of *Ergatis* Blackwall, 1841 (Arachnida). Currently considered to be a junior subjective synonym of *Aristotelia* Hübner, [1825] (Walsingham, 1897, *Proc. zool. Soc. Lond.* **1897** : 63).

See also: *Argyritis* Heinemann, 1870.

‡*ERICKSSONELLA* Janse, 1960 (August 1st), *Moths S. Afr.* **6** : 171.
Incorrect (multiple) original spelling of *Erikssonella* Janse, 1960. There is clear evidence in the original publication that the spelling ‡*Ericksssonella* is an inadvertent error. According to Janse's statement on p. 172 the genus was named after Mr Eriksson.

*‡*ERIDACHTA* Janse, 1963, *Moths S. Afr.* **6** : 271.
Incorrect subsequent spelling of *Eridachtha* Meyrick, 1910.

ERIDACHTHA Meyrick, 1910, *J. Bombay nat. Hist. Soc.* **20** : 440.
Type-species: ***Eridachtha prolocha*** Meyrick, 1910, *ibid.* **20** : 440, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).
See also: *Corthyntis* Meyrick, 1916; ‡*Eridachta* Janse, 1963.

‡*ERIKSONELLA* Janse, 1960 (October 15th), *Moths S. Afr.* **6**, pl. 89.
Incorrect subsequent spelling of *Erikssonella* Janse, 1960 (August 1st).

ERIKSSONELLA Janse, 1960 (August 1st), *Moths S. Afr.* **6** : 171 [also as ‡*Ericksssonella*, incorrect (multiple) original spelling].
Type-species: ***Compsolechia permagna*** Meyrick, 1920, *Ann. S. Afr. Mus.* **17** : 284, by original designation and monotypy.
There is clear evidence in the original publication that the spelling ‡*Ericksssonella* is an inadvertent error. According to Janse's statement on p. 172 the genus was named after Mr Eriksson.
See also: ‡*Ericksssonella* Janse, 1960; ‡*Eriksonella* Janse, 1960.

ERIPNURA Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 242.
Type-species: ***Eripnura criodes*** Meyrick, 1914, *ibid.* **1914** : 242, by monotypy.

ERISTHENODES Meyrick, 1935, *Exot. Microlepidopt.* **4** : 559.
Type-species: ***Eristhenodes tetrapetra*** Meyrick, 1935, *ibid.* **4** : 560, by monotypy.

ERYTHRIASTIS Meyrick, 1925, *Genera Insect.* **184** : 8 [key], 245.
Type-species: ***Pachnistis rubentula*** Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 273, by original designation.

ETHIROSTOMA Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 244.
Type-species: ***Ethirostoma semiacma*** Meyrick, 1914, *ibid.* **1914** : 245, by monotypy.

ETHMIOPSIS Meyrick, 1935, *in* Caradja & Meyrick, *Mater. Microlepid. Fauna chin. Provinzen Kiangsu, Chekiang Hunan* : 69.
Type-species: ***Ethmiopsis prosectrix*** Meyrick, 1935, *ibid.* : 69, by monotypy.

EUCATOPTUS Walsingham, 1897, *Proc. zool. Soc. Lond.* **1897** : 69.
Type-species: ***Eucatoptus penicillata*** Walsingham, 1897, *ibid.* **1897** : 70, by original designation.
Currently considered to be a junior subjective synonym of *Aristotelia* Hübner, [1825] (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 498); subgenus of *Aristotelia* Hübner, [1825] (Gaede, 1937, *Lepid. Cat.* **79** : 44).

EUCHIONODES Clarke, 1950, *J. Wash. Acad. Sci.* **40** : 285.
Type-species: ***Euchionodes traditionis*** Clarke, 1950, *ibid.* **40** : 285, figs 1, 5, by original designation and monotypy.

‡*EUCHRYSA* Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 24.
Incorrect subsequent spelling of *Enchrysa* Zeller, 1873.

EUCORDYLEA Dietz, 1900, *Ent. News* **11** : 349.
Type-species: ***Eucordylea atrupictella*** Dietz, 1900, *ibid.* **11** : 350, pl. 1, fig. 1, by monotypy.
Currently considered to be a junior subjective synonym of *Coleotechnites* Chambers, 1880 (Hodges, 1965, *Ent. News* **76** : 263).

EUDACTYLOTA Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 54.

Type-species: ***Neodactylota barberella*** Busck, 1903, *Proc. U.S. natn. Mus.* **25** : 836, by original designation and monotypy.

Junior subjective synonym of *Neodactylota* Busck, 1903 (Meyrick, 1925, *Genera Insect.* **184** : 25); currently considered to be a valid genus (Hodges, 1966, *Proc. U.S. natn. Mus.* **119** : 46).

EUDODACLES Snellen, 1889, *Tijdschr. Ent.* **32** : 204 (objective replacement name for *Cladodes* Heinemann, 1870, nom. praeocc.).

Type-species: *Tinea dimidiella* [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend* : 141, by subsequent designation for *Cladodes* Heinemann, 1870: Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 84.

Cladodes Heinemann, 1870, is a junior objective synonym of *Brachmia* Hübner, [1825]; *Eudodacles* Snellen, 1889, is therefore an unnecessary replacement name and a junior objective synonym of *Brachmia* Hübner, [1825].

EUHOMALOCERA Diakonoff, 1967, *Bull. U.S. natn. Mus.* **257** : 147 [key], 150.

Type-species: ***Euhomalocera heliosema*** Diakonoff, 1967, *ibid.* **257** : 151, figs, by original designation and monotypy.

EULAMPROTES Bradley, 1971, *Entomologist's Gaz.* **22** : 27 (objective replacement name for *Lamprotes* Heinemann, 1870, nom. praeocc.).

Type-species: ***Tinea atrella*** [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend* : 140, by subsequent designation for *Lamprotes* Heinemann, 1870: Walsingham, 1909, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 23.

See also: *Argyritis* Heinemann, 1870.

EUNEBRISTIS Meyrick, 1923, *Exot. Microlepidopt.* **3** : 3.

Type-species: ***Noeza zachroa*** Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 278, by original designation.

EUNOMARCHA Meyrick, 1923, *Exot. Microlepidopt.* **3** : 26.

Type-species: ***Eunomarcha glycinopis*** Meyrick, 1923, *ibid.* **3** : 26, by monotypy.

Currently considered to be a junior subjective synonym of *Atoponeura* Busck, 1914 (Meyrick, 1926, *Exot. Microlepidopt.* **3** : 270), and therefore available as the subjective replacement name for *Atoponeura* Busck, 1914, nom. praeocc. *E. glycinopis* Meyrick, 1923, is currently considered to be a junior subjective synonym of *Atoponeura violacea* Busck, 1914, the type-species of *Atoponeura* Busck, 1914 (Meyrick, 1926, *ibid.* **3** : 270).

EUPOLELLA Fletcher, 1940, *Entomologist's Rec. J. Var.* **52** : 18 (objective replacement name for *Eupolis* Meyrick, 1923, nom. praeocc.).

Type-species: ***Glyphidocera stygnota*** Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 111, pl. 3, fig. 32, by original designation for and monotypy of *Eupolis* Meyrick, 1923.

EUPOLIS Meyrick, 1923, *Exot. Microlepidopt.* **2** : 625 (nom. praeocc.).

Type-species: *Glyphidocera stygnota* Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 111, pl. 3, fig. 32, by original designation and monotypy.

Eupolis Meyrick, 1923, is a junior homonym of *Eupolis* Cambridge, 1900 (Arachnida); *Eupolella* Fletcher, 1940, was proposed as the objective replacement name.

*****EUPRAGIA*** Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 106.

Type-species: ***Eupragia solida*** Walsingham, 1911, *ibid.* **4** : 107, fig. 22, pl. 3, fig. 28, by original designation and monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Oecophoridae (Clarke, 1963, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **4** : 217).

EURYCTISTA Janse, 1963, *Moths S. Afr.* **6** : 250, 276 and 280 [key].

Type-species: ***Euryctista hobohmi*** Janse, 1963, *ibid.* **6** : 251, figs, by original designation and monotypy.

EURYSACCA Povolný, 1967, *Acta ent. Mus. natn. Pragae* **37** : 97.
Type-species: ***Phthorimaea melanocampta*** Meyrick, 1917, *Trans. ent. Soc. Lond.* **1917** : 44, by original designation and monotypy.
Originally proposed as a subgenus of *Scrobipalpula* Povolný, 1964.

EURYSARA Turner, 1919, *Proc. R. Soc. Qd* **31** : 167.
Type-species: ***Eurysara pleurophaea*** Turner, 1919, *ibid.* **31** : 167, by monotypy.
Correct date of publication (1919, December 30th) taken from original wrapper.
Currently considered to be a junior subjective synonym of *Dichomeris* Hübner, 1818 (Meyrick, 1925, *Genera Insect.* **184** : 174).

EURYZANCLA Turner, 1919, *Proc. R. Soc. Qd* **31** : 131.
Type-species: ***Euryzancla melanophylla*** Turner, 1919, *ibid.* **31** : 131, by original designation.
Correct date of publication (1919, December 30th) taken from original wrapper.
Currently considered to be a junior subjective synonym of *Dichomeris* Hübner, 1818 (Meyrick, 1925, *Genera Insect.* **184** : 174).

EUSCROBIPALPA Povolný, 1967, *Přirodov. Pr. Česk. Akad. Věd.*, N. S. **1** : 212.
Type-species: ***Scrobipalpa grossa*** Povolný, 1966, *Acta ent. bohemoslovaca* **63** : 400, figs 18–20, : 407, fig. 8, by original designation.
Originally proposed as a subgenus of *Scrobipalpa* Janse, 1951.

EUSTALODES Meyrick, 1927, *Insects Samoa* **3** : 82.
Type-species: ***Eustalodes oenosema*** Meyrick, 1927, *ibid.* **3** : 82, by monotypy.

EUTELES* Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)2**(1) : 333 (nom. praeocc.).
Type-species: *Tinea kollarella* Costa, [1836], *Fauna Regno Napoli*, Lepid. : [219], by monotypy.
For date and pagination of *T. kollarella* Costa, [1836], see Direction 59, *Opin. Decl. int. Commn zool. Nom.* **15**(16) : [iii]–xviii (1957).
Euteles Heinemann, 1870, is a junior homonym of *Euteles* Gistel, 1848 (Lepidoptera: Noctuidae); *Paradoris* Meyrick, 1907, was proposed as the objective replacement name but is also preoccupied; *Enolmis* Duponchel, [1845], has been erroneously used as the subjective replacement name (Lhomme, [1949], *Cat. Lépid. Fr. Belg.* **2** : 783). Currently considered to be a senior subjective synonym of *Odites* Walsingham, 1891, which is used as the subjective replacement name (Gozmány, 1958, *Fauna Hung.* **40** : 35).
Originally described in the Gelechi[i]dae; subsequently transferred to the Xyloryctidae (Meyrick, 1907, *J. Bombay nat. Hist. Soc.* **17** : 740).

EUZONOMACHA Meyrick, 1925, *Genera Insect.* **184** : 17 [key], 133.
Type-species: ***Gelechia subjectella*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 611, by original designation and monotypy.

EVAGORA Clemens, 1860, *Proc. Acad. nat. Sci. Philad.* **1860** : 165 (nom. praeocc.).
Type-species: *Evagora apicitripunctella* Clemens, 1860, *ibid.* **1860** : 165, by monotypy.
Evagora Clemens, 1860, is a junior homonym of *Evagora* Péron & Lesueur, 1810 (Coelenterata). Junior subjective synonym of *Recurvaria* Haworth, 1828 (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 500); *Aristotelia* Hübner, [1825] (Walsingham, 1907, *Fauna hawaii.* **1**(5) : 478). Currently considered to be a senior subjective synonym of *Coleotechnites* Chambers, 1880, which is used as the subjective replacement name (Hodges, 1965, *Ent. News* **76** : 263).

EVIPPE Chambers, 1873, *Can. Ent.* **5** : 185.
Type-species: ***Evippe prunifoliella*** Chambers, 1873, *ibid.* **5** : 186, by monotypy.
See also: *Phaetusa* Chambers, 1875; *Tholerostola* Meyrick, 1917.

EXCEPTIA Povolný, 1967, *Acta ent. Mus. natn. Pragae* **37** : 114.
Type-species: ***Gnorimoschema neopetrella*** Keifer, 1936, *Bull. Calif. Dep. Agric.* **25** : 239, pl. 4, fig. 2, by original designation and monotypy.

EXCOMMATICA Janse, 1951, *Moths S. Afr.* **5** : 267.
Type-species: ***Commatica compsotoma*** Meyrick, 1921, *Ann. Transv. Mus.* **8** : 77, by original designation and monotypy.

EXORGANA* Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S. N. **8 : 345.
Type-species: ***Exorgana iranica*** Gozmány, 1957, *ibid.* **8** : 345, fig. 9 G, by original designation.
Junior subjective synonym of *Asbolistis* Meyrick, 1936 (Amsel, 1959, *Bull. Soc. ent. Égypte* **43** : 62); currently considered to be a junior subjective synonym of *Ceuthomadarus* Mann, 1864 (Gozmány, 1961, *Acta zool. hung.* **7** : 108). *E. iranica* Gozmány, 1957, is currently considered to be a junior subjective synonym of *Asbolistis chthoniopa* Meyrick, 1936, the type-species of *Asbolistis* Meyrick, 1936 (Amsel, 1959, *Bull. Soc. ent. Égypte* **43** : 62).
Originally described in the Timyridae [= Lecithoceridae]; subsequently included in the Gelechiidae (Amsel, 1959, *Bull. Soc. ent. Égypte* **43** : 62); currently placed in the Lecithoceridae.

EXOTELEIA Wallengren, 1881, *Ent. Tidskr.* **2** : 94.
Type-species: ***Phalaena (Tinea) dodecella*** Linnaeus, 1758, *Syst. Nat.* (ed. 10) **1** : 539, by monotypy.
Erroneously attributed to Walsingham, 1881, by Lhomme, [1946], *Cat. Lépid. Fr. Belg.* **2** : 564.
See also: *Heringia* Spuler, 1910; *Heringiola* Strand, 1917; *Paralechia* Busck, 1903.

FACULTA Busck, 1939, *Proc. U.S. natn. Mus.* **86** : 568 [keys], 581.
Type-species: ***Gelechia triangulella*** Busck, 1907, *Proc. ent. Soc. Wash.* **8** : 91, by original designation and monotypy.

FAPUA Kieffer & Jörgensen, 1910, *Zentbl. Bakt. ParasitKde* (2. Abt.) **27** : 378.
Type-species: ***Fapua albinervella*** Kieffer & Jörgensen, 1910, *ibid.* **27** : 378, by monotypy.
Fapua and *F. albinervella* originated from Strand but were used and unintentionally made nomenclaturally available by Kieffer & Jörgensen prior to the proposal and description by Strand, 1911, *Berl. ent. Z.* **55** : 168.
Currently considered to be a junior subjective synonym of *Tecia* Kieffer & Jörgensen, 1910 (Meyrick, 1925, *Genera Insect.* **184** : 89).

FASCISTA Busck, 1939, *Proc. U.S. natn. Mus.* **86** : 568 [keys], 580.
Type-species: ***Depressaria cercerisella*** Chambers, 1872, *Can. Ent.* **4** : 108, by original designation.

‡*FELEIA* Christoph, 1882, *Bull. Soc. Nat. Moscou* **57** : 25.
Incorrect subsequent spelling of *Teleia* Heinemann, 1870.

FICULEA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 794.
Type-species: ***Ficulea blandulella*** Walker, 1864, *ibid.* **29** : 795, by monotypy.
Junior subjective synonym of *Gelechia* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 73); here considered to be a valid genus, **gen. rev.**

FILATIMA Busck, 1939, *Proc. U.S. natn. Mus.* **86** : 568 [keys], 575.
Type-species: ***Gelechia serotinella*** Busck, 1903, *ibid.* **25** : 882, by original designation.

FILISIGNELLA Janse, 1951, *Moths S. Afr.* **5** : 232.
Type-species: ***Epiphthora cirrhaea*** Meyrick, 1914, *Ann. Transv. Mus.* **4** : 190, by original designation and monotypy.

FLEXIPTERA Janse, 1958, *Moths S. Afr.* **6** : 94.
Type-species: ***Gelechia revoluta*** Meyrick, 1918, *Ann. Transv. Mus.* **6** : 17, by original designation and monotypy.

FORTINEA Busck, 1914, *Proc. U.S. natn. Mus.* **47** : 3.
Type-species: ***Fortinea auriciliella*** Busck, 1914, *ibid.* **47** : 3, by original designation and monotypy.

*‡*FRISELIA* Janse, 1963, *Moths S. Afr.* **6** : 269.
Incorrect subsequent spelling of *Frisilia* Walker, 1864.

FRISERIA Busck, 1939, *Proc. U.S. natn. Mus.* **86** : 567 and 568 [keys], 573.
Type-species: ***Gelechia lindenella*** Busck, 1903, *ibid.* **25** : 876, by original designation.
G. lindenella Busck, 1903, is currently considered to be a junior subjective synonym of *Gelechia cockerelli* Busck, 1903, *Proc. U.S. natn. Mus.* **25** : 871 (Hodges, 1966, *Proc. U.S. natn. Mus.* **119** : 52, 54).

****FRISILIA*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 795.
Type-species: ***Frisilia nesciatella*** Walker, 1864, *ibid.* **29** : 796, by monotypy.
Originally described in the Gelechi[i]dae; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).
See also: ‡*Friselia* Janse, 1963; *Macrernis* Meyrick, 1887; *Tipasa* Walker, 1864.

FRUMENTA Busck, 1939, *Proc. U.S. natn. Mus.* **86** : 568 [keys], 577.
Type-species: ***Gelechia nundinella*** Zeller, 1873, *Verh. zool.-bot. Ges. Wien* **23** : 256, by original designation and monotypy.

FURCAPHORA Janse, 1958, *Moths S. Afr.* **6** : 66.
Type-species: ***Telphusa caelata*** Meyrick, 1913, *Ann. Transv. Mus.* **3** : 287, by original designation and monotypy.

GAESA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 803.
Type-species: ***Gaesa decusella*** Walker, 1864, *ibid.* **29** : 804, by monotypy.
Junior subjective synonym of *Dichomeris* Hübner, 1818 (Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 87).

‡*GALECHIA* Desmarest, (1857), *in* Chenu, *Encycl. Hist. nat.*, Papillons nocturnes : 272, 274.
Incorrect subsequent spelling of *Gelechia* Hübner, [1825].

GALTICA Busck, 1914, *Proc. U.S. natn. Mus.* **47** : 6.
Type-species: ***Galtica venosa*** Busck, 1914, *ibid.* **47** : 6, by original designation and monotypy.

GAMBROSTOLA Meyrick, 1926, *Ann. S. Afr. Mus.* **23** : 332.
Type-species: ***Gambrostola imposita*** Meyrick, 1926, *ibid.* **23** : 332, by monotypy.

GAPHARA* Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29 : 794 (nom. praeocc.).
Type-species: *Gaphara recitatella* Walker, 1864, *ibid.* **29** : 794, by monotypy.
Gaphara Walker, 1864, is a junior homonym of *Gaphara* Walker, 1862 (Lepidoptera: Noctuidae). No replacement name is currently available.
Originally described in the Gelechi[i]dae; not included in the Gelechiidae by Meyrick (1925, *Genera Insect.* **184**) and Gaede (1937, *Lepid. Cat.* **79**); cited but not placed in a family by Fletcher (1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 97); placed in the Tineidae in the collection of the British Museum (Natural History), London.

GASMARA* Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **30 : 1039 (nom. praeocc.).
Type-species: *Gasmara coelatella* Walker, 1864, *ibid.* **30** : 1040, by monotypy.
Gasmara Walker, 1864, is a junior homonym of *Gasmara* Walker, [1863] (Lepidoptera: Geometridae). Currently considered to be a senior subjective synonym of *Antiochtha* Meyrick, 1905 (Meyrick, 1925, *Genera Insect.* **184** : 229), which is here used as the subjective replacement name for *Gasmara* Walker, 1864, nom. praeocc.
Originally described in the Gelechi[i]dae; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

GELECHIA Hübner, [1825], *Verz. bekannter Schmett.* : 415.
Type-species: ***Tinea rhombella*** [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend* : 139, by subsequent designation: Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 59.

Correct date of publication ([1825]) taken from Opinion 150, *Opin. Decl. int. Commn zool. Nom.* **2** : 166 (1943).

See also: *Aroga* Busck, 1914; *Bryotropha* Heinemann, 1870; *Catastega* Clemens, 1861; *Cirrha* Chambers, 1872; *Ficulea* Walker, 1864; ‡*Galechia* Desmarest, (1857); ‡*Gelschia* Nowicki, 1865; *Guenea* Bruand, 1850; *Lita* Treitschke, 1833; *Oeseis* Chambers, 1875; *Pseudochelaria* Dietz, 1900.

‡*GELSCHIA* Nowicki, 1865, *Motyle Galicyi* : lxx.
Incorrect subsequent spelling of *Gelechia* Hübner, [1825].

GENIADOPHORA Walsingham, 1897, *Proc. zool. Soc. Lond.* **1897** : 71.
Type-species: ***Poecilia extranea*** Walsingham, 1892, *ibid.* **1891** : 521, by original designation and monotypy.
Currently considered to be a junior subjective synonym of *Telphusa* Chambers, 1872 (Meyrick, 1925, *Genera Insect.* **184** : 69).

****GIGANTOLETRIA*** Gozmány, 1963, *Acta zool. hung.* **9** : 71.
Type-species: ***Gigantoletria amseli*** Gozmány, 1963, *ibid.* **9** : 73, figs 4–6, by original designation and monotypy.
G. amseli Gozmány, 1963, is a junior secondary homonym of *Bubulcellodes amseli* Gozmány, 1954, *Annls hist.-nat. Mus. natn. hung.*, S.N. **5** : 279, figs 15, 16, which has been placed in *Gigantoletria* (Gozmány, 1967, *Acta zool. hung.* **13** : 273); *Gigantoletria amselina* Gozmány, 1967, *ibid.* **13** : 273, was proposed as the objective replacement name.
Originally described in the Symmocidae; subsequently transferred to the Holcopogonidae (Gozmány, 1967, *Acta zool. hung.* **13** : 273).

GLADIOVALVA Sattler, 1960, *Dt. ent. Z.*, N.F. **7** : 16 and 17 [keys], 60.
Type-species: ***Gelechia rumicivorella*** Millière, 1881, *Lépid.* **7** : 11, pl. 10, fig. 13, by original designation.

GLAPHYRERGA Meyrick, 1925, *Genera Insect.* **184** : 10 [key], 113.
Type-species: ***Tachyptilia mauricaudella*** Oberthür, 1888, *Étud. Ent.* **12** : 43, pl. 6, fig. 34, by original designation and monotypy.
Currently considered to be a junior subjective synonym of *Harpagidia* Ragonot, 1895 (Sattler, 1968, *Dt. ent. Z.*, N.F. **15** : 121).

GLAUCACNA Forbes, 1931, *J. Dep. Agric. P. Rico* **15** : 369.
Type-species: ***Glaucacna iridea*** Forbes, 1931, *ibid.* **15** : 369, figs, by monotypy.
See also: ‡*Glaucagna* Gaede, 1937.

‡*GLAUCAGNA* Gaede, 1937, *Lepid. Cat.* **79** : 87.
Incorrect subsequent spelling of *Glaucacna* Forbes, 1931.

GLAUCE Chambers, 1875, *Can. Ent.* **7** : 11.
Type-species: ***Glauce pectenalaeella*** Chambers, 1875, *ibid.* **7** : 12, by monotypy.

GLYCEROPHTHORA Meyrick, 1935, *Exot. Microlepidopt.* **4** : 590.
Type-species: ***Glycerophthora clavicularis*** Meyrick, 1935, *ibid.* **4** : 590, by monotypy.

GLYPHIDOCERA Walsingham, 1892, *Proc. zool. Soc. Lond.* **1891** : 531.
Type-species: ***Glyphidocera audax*** Walsingham, 1892, *ibid.* **1891** : 531, pl. 41, fig. 8, by original designation and monotypy.
Originally described in the Tineidae: Xyloryctinae [= Xyloryctidae]; subsequently transferred to the Gelechiidae (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 507).
See also: *Harpagandra* Meyrick, 1918.

‡*GNORIMOCHEMA* Dyar, 1902, *Proc. U.S. natn. Mus.* **25** : 405.
Incorrect subsequent spelling of *Gnorimoschema* Busck, 1900.

GNORIMOSCHEMA Busck, 1900, *Proc. U.S. natn. Mus.* **23** : 227.
Type-species: ***Gelechia gallaesolidaginis*** Riley, 1869, *Rep. natn. Inst. Mo.* **1** : 173, by original designation.

See also: *Caryocolum* Gregor & Povolný, 1954; ‡*Gnorimochema* Dyar, 1902; ‡*Gnorrimoschema* Hartig, 1964; ‡*Gonorimoschema* Deurs, 1954; *Lerupsia* Riedl, 1965; *Neoschema* Povolný, 1967; *Tuta* Kieffer & Jörgensen, 1910.

‡*GNORRIMOSCHEMA* Hartig, 1964, *Studi trent. Sci. nat.* **41** : 36 (footnote).
Incorrect subsequent spelling of *Gnorimoschema* Busck, 1900.

GNOSIMACHA Meyrick, 1927, *Exot. Microlepidopt.* **3** : 354.
Type-species: ***Gnosimacha catericta*** Meyrick, 1927, *ibid.* **3** : 354, by monotypy.

****GOBILETRIA*** Gozmány, 1964, *Annls hist.-nat. Mus. natn. hung.* **56** : 461.
Type-species: ***Gobiletria kaszabi*** Gozmány, 1964, *ibid.* **56** : 461, figs 1, 2, by original designation and monotypy.
Originally described in the Symmocidae; subsequently transferred to the Holcopogonidae (Gozmány, 1967, *Acta zool. hung.* **13** : 274).

GOMPHOCRATES Meyrick, 1925, *Entomologist* **58** : 184.
Type-species: *Anacampsis rasilella* Herrich-Schäffer, 1854, *Syst. Bearb. Schmett. Eur.* **5** : 202; 1853, *ibid*, **5**, pl. 63, fig. 459 [non-binominal], by monotypy.
Gomphocrates was used and unintentionally made nomenclaturally available by Meyrick, 1925, prior to its proposal and generic description by Meyrick, 1926, *Exot. Microlepidopt.* **3** : 288.
Junior objective synonym of *Uliaria* Dumont, 1921.

‡*GOMPSOSARIS* Gaede, 1937, *Lepid. Cat.* **79** : 95.
Incorrect subsequent spelling of *Compsosaris* Meyrick, 1914.

GONAEPA Walker, 1866, *List Specimens lepid. Insects Colln Br. Mus.* **35** : 1840.
Type-species: ***Gonaepa josianella*** Walker, 1866, *ibid.* **35** : 1840, by monotypy.

GONIA* Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)2**(1) : 331 (nom. praeocc.).
Type-species: *Gelechia pudorina* Wocke, 1857, *Z. Ent. Breslau* **10** (Lepid.): 5, by monotypy.
Gonia Heinemann, 1870, is a junior homonym of *Gonia* Meigen, 1803 (Diptera); *Deuterogonia* Rebel, 1901, was proposed as the objective replacement name.
Originally described in the Gelechi[i]dae; subsequently included in the Gelechiidae: Oecophorinae [= Oecophoridae] by Spuler, 1910, *Schmett. Eur.* **2** : 349, who at the same time (in a footnote) proposed for it the subfamily Deuterogoniinae.

‡*GONORIMOSCHEMA* Deurs, 1954, *Ent. Meddr* **27** : 51.
Incorrect subsequent spelling of *Gnorimoschema* Busck, 1900.

GRANDIPALPA Janse, 1951, *Moths S. Afr.* **5** : 235.
Type-species: ***Grandipalpa robusta*** Janse, 1951, *ibid.* **5** : 236, figs, by original designation and monotypy.

GUEBLA Chrétien, 1915, *Annls Soc. ent. Fr.* **84** : 324.
Type-species: ***Guebla compositella*** Chrétien, 1915, *ibid.* **84** : 325, by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 65.

GUENEA Bruand, 1850, *Mém. Soc. Emul. Doubs* (1)**3**(3) : 43.
Type-species: ***Haemylis pinguinella*** Treitschke, 1832, *Schmett. Eur.* **9**(1) : 244, by subsequent designation: Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 101.
Currently considered to be a junior subjective synonym of *Gelechia* Hübner, [1825] (Fletcher 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 98, 101). *H. pinguinella* Treitschke, 1832, is currently considered to be a junior subjective synonym of *Tinea turpella* [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend* : 139 (Herrich-Schäffer, 1854, *Syst. Bearb. Schmett. Eur.* **5** : 182).
Originally described in the Roesler[s]tammidae; subsequently transferred to the Gelechiadae [= Gelechiidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 98, 101).

****HABROGENES*** Meyrick, 1918, *Exot. Microlepidopt.* **2** : 102.
Type-species: ***Lecithocera eupatris*** Meyrick, 1910, *J. Bombay nat. Hist. Soc.* **20** : 443, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

‡*HAMALOXESTIS* Meyrick, 1931, *in* Caradja, *Bull. Sect. scient. Acad. roum.* **14** : 68.
Incorrect subsequent spelling of *Homaloxestis* Meyrick, 1910.

***HAMARTEMA** Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 338.
Type-species: ***Hamartema marthae*** Gozmány, 1957, *ibid.* **8** : 339, fig. 1 J, by original designation and monotypy.
Originally described in the Gelechiidae: Symmocinae; currently placed in the Symmocidae.

HAPALONOMA Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 244.
Type-species: ***Hapalonoma argyracta*** Meyrick, 1914, *ibid.* **1914** : 244, by monotypy.
H. argyracta Meyrick, 1914, is currently considered to be a junior subjective synonym of *Gelechia sublustricella* Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 623 (Meyrick, 1925, *Genera Insect.* **184** : 116).

HAPALOSARIS Meyrick, 1917, *Trans. ent. Soc. Lond.* **1917** : 37.
Type-species: ***Hapalosaris petulans*** Meyrick, 1917, *ibid.* **1917** : 37, by monotypy.

HAPLOCHELA Meyrick, 1923, *Exot. Microlepidopt.* **3** : 32.
Type-species: ***Chelaria mundana*** Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 254, by original designation and monotypy.

HAPLOVALVA Janse, 1958, *Moths S. Afr.* **6** : 32.
Type-species: ***Gelechia ametris*** Meyrick, 1921, *Ann. Transv. Mus.* **8** : 72, by original designation and monotypy.

HARMATITIS Meyrick, 1910, *J. Bombay nat. Hist. Soc.* **20** : 460.
Type-species: ***Harmatitis sphecopa*** Meyrick, 1910, *ibid.* **20** : 460, by monotypy.

HARPAGANDRA Meyrick, 1918, *Exot. Microlepidopt.* **2** : 210.
Type-species: ***Harpagandra cryphiodes*** Meyrick, 1918, *ibid.* **2** : 210, by monotypy.
Currently considered to be a junior subjective synonym of *Glyphidocera* Walsingham, 1892 (Meyrick, 1925, *Genera Insect.* **184** : 253).
Originally described in the Xyloryctidae; subsequently transferred to the Gelechiadae [= Gelechiidae] (Meyrick, 1925, *Genera Insect.* **184** : 253).

HARPAGIDIA Ragonot, 1895, *Bull. Soc. ent. Fr.* **1895** : 107.
Type-species: ***Harpagidia pallidibasella*** Ragonot, 1895, *ibid.* **1895** : 107, by monotypy.
H. pallidibasella Ragonot, 1895, is currently considered to be a junior subjective synonym of *Gelechia magnetella* Staudinger, 1871, *Berl. ent. Z.* **14** : 310 (Sattler, 1968, *Dt. ent. Z.*, N.F. **15** : 122).
See also: *Glaphyrerga* Meyrick, 1925.

HARPAGUS Stephens, 1834, *Ill. Br. Ent.*, Haustellata **4** : 278 (nom. praeocc.).
Type-species: [*Phalaena*] *cinctella* Clerck, 1759, *Icon. Insect. rariorum* **1**, pl. 11, fig. 2; 1864, *ibid.* **2**, Register : [1], by subsequent designation: Westwood, 1840, *Introd. mod. Classif. Insects* **2**, *Synopsis Genera Br. Insects* : 112.
The type-species was erroneously attributed to Linnaeus by Stephens and Westwood.
The type-designations by Westwood, 1840, *Introd. mod. Classif. Insects* **2**, *Synopsis Genera Br. Insects*, have been validated by the International Commission on Zoological Nomenclature, 1922, Opinion 71, *Smithson. misc. Collns* **73** : 16–18.

Currently considered to be a senior subjective synonym of *Syncopacma* Meyrick, 1925, **syn. n.**, which is here used as the subjective replacement name for *Harpagus* Stephens, 1834, nom. praeocc.
Originally described in the Yponomeutidae; subsequently transferred to the Gelechiadae [= Gelechiidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 104).

HARPOGRAPTIS Meyrick, 1925, *Genera Insect.* **184** : 20 [key]; 126.

Type-species: ***Stomopteryx eucharacta*** Meyrick, 1922, *Trans. ent. Soc. Lond.* **1922** : 66, by original designation and monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Cosmopterygidae [= Cosmopterigidae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).

HECESTOPTERA Gozmány, 1961, *Acta zool. hung.* **7** : 101.

Type-species: ***Hecestoptera kyra*** Gozmány, 1961, *ibid.* **7** : 101, figs 1 E, F, by original designation and monotypy.

Originally described in the Gelechiidae, but associated with genera of Symmocidae; currently placed in the Symmocidae.

HEDMA Dumont, 1932, *Livre Cent. Soc. ent. Fr.* : 714.

Type-species: ***Hedma abzacella*** Dumont, 1932, *ibid.* : 714, figs 18–22, by monotypy.

HELCYSTOGRAMMA Zeller, 1877, *Horae Soc. ent. ross.* **13** : 369.

Type-species: ***Gelechia* (*Helcystogramma*) *obseratella*** Zeller, 1877, *ibid.* **13** : 371, pl. 5, fig. 127, by subsequent designation: Meyrick, 1910, *Entomologist's mon. Mag.* **46** : 282.

Originally proposed as a subgenus of *Gelechia* Hübner, [1825]. Junior subjective synonym of *Dichomeris* Hübner, 1818 (Walsingham, 1911, *Biologia cent.-am.*, *Zool.*, Lepid.-Heterocera **4** : 87); *Strobisia* Clemens, 1860 (Meyrick, 1910, *Entomologist's mon. Mag.* **46** : 282). Currently considered to be a junior subjective synonym of *Onebala* Walker, 1864 (Meyrick, 1925, *Genera Insect.* **184** : 137). *G. obseratella* Zeller, 1877, is currently considered to be a junior subjective synonym of *Gelechia hibisci* Stainton, 1859, *Trans. ent. Soc. Lond.*, N.S. **5** : 117 (Meyrick, 1910, *Entomologist's mon. Mag.* **46** : 282).

See also: *Dectobathra* Meyrick, 1904.

HELIANGARA Meyrick, 1906, *J. Bombay nat. Hist. Soc.* **17** : 147.

Type-species: ***Heliangara lampetis*** Meyrick, 1906, *ibid.* **17** : 147, by monotypy.

HELICE Chambers, 1873, *Can. Ent.* **5** : 187 (nom. praeocc.).

Type-species: *Helice pallidochrella* Chambers, 1873, *ibid.* **5** : 188, by monotypy.

Helice Chambers, 1873, is a junior homonym of *Helice* de Haan, 1835 (Crustacea). Currently considered to be a senior subjective synonym of *Theisoa* Chambers, 1874, which is used as the subjective replacement name (Braun, 1919, *Can. Ent.* **51** : 203).

See also: *Cacelice* Busck, 1902.

HELINA Guenée, 1849, *in* Lucas, *Explor. scient. Algérie*, Zool. **3** : 411 (nom. praeocc.).

Type-species: *Carcina flammella* Hübner, [1825], *Verz. bekannter Schmett.* : 410, by monotypy.

Helina Guenée, 1849, is a junior homonym of *Helina* Robineau-Desvoidy, 1830 (Diptera). Currently considered to be a senior subjective synonym of *Mirificarma* Gozmány, 1955, **syn. n.,** which is here used as the subjective replacement name. *C. flammella* Hübner, [1825], is the objective replacement name for *Tinea formosella* Hübner, 1796, *Samml. eur. Schmett.* **8** : 62, pl. 23, fig. 160, which is a junior primary homonym of *Tinea formosella* [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend* : 140 (Oecophoridae).

HEMIARCHA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 258 [key], 331.

Type-species: ***Gelechia thermochroa*** Lower, 1893, *Trans. R. Soc. S. Aust.* **17** : 169, by original designation.

HERINGIA Spuler, 1910, *Schmett. Eur.* **2** : 357 (nom. praeocc.).

Type-species: *Phalaena* (*Tinea*) *dodecella* Linnaeus, 1758, *Syst. Nat.* (ed. 10) **1** : 539, by monotypy.

Heringia Spuler, 1910, is a junior homonym of *Heringia* Rondani, 1856 (Diptera). Junior objective synonym of *Exoteleia* Wallengren, 1881. *Heringiola* Strand, 1917, was unnecessarily proposed as the objective replacement name.

Meyrick, 1925, *Genera Insect.* **184** : 59, erroneously attributed the name to Hedemann; however, *Heringia* Hedemann, 1894, nom. praeocc., belongs to the Pyralidae.

HERINGIOLA Strand, 1917, *Int. ent. Z.* **10** : 137 (objective replacement name for *Heringia* Spuler, 1910, nom. praeocc.).

Type-species: *Phalaena* (*Tinea*) *dodecella* Linnaeus, 1758, *Syst. Nat.* (ed. 10) **1** : 539, by monotypy of *Heringia* Spuler, 1910.

Unnecessary replacement name for *Heringia* Spuler, 1910, nom. praeocc., which is a junior objective synonym of *Exoteleia* Wallengren, 1881.

Correct date of publication (1917, February 24th) taken from p. 137 (title of no. 24).

HETERALCIS Meyrick, 1925, *Genera Insect.* **184** : 11 [key], 209.

Type-species: ***Timyra tetraclina*** Meyrick, 1906, *J. Bombay nat. Hist. Soc.* **17** : 143, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

HETERODELTIS Meyrick, 1925, *Genera Insect.* **184** : 3 [key], 211.

Type-species: ***Tipha trichroa*** Meyrick, 1906, *J. Bombay nat. Hist. Soc.* **17** : 142, by original designation and monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

HETERODERCES Meyrick, 1929, *Exot. Microlepidopt.* **3** : 521.

Type-species: ***Heteroderces oxylitha*** Meyrick, 1929, *ibid.* **3** : 521, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

See also: ‡*Homaloderces* Gaede, 1937.

HETEROZANCLA Turner, 1919, *Proc. R. Soc. Qd* **31** : 134.

Type-species: ***Heterozancla rubida*** Turner, 1919, *ibid.* **31** : 134, by monotypy.

Correct date of publication (1919, December 30th) taken from original wrapper.

HIERANGELA Meyrick, 1894, *Trans. ent. Soc. Lond.* **1894** : 14.

Type-species: ***Hierangela erythrogramma*** Meyrick, 1894, *ibid.* **1894** : 15, by monotypy.

HIERONALA Gozmány, 1963, *Acta zool. hung.* **9** : 102.

Type-species: ***Hieronala huri*** Gozmány, 1963, *ibid.* **9** : 104, figs 38, 39, by original designation and monotypy.

Originally described and currently placed in the Symmocidae.

HINNEBERGIA Spuler, 1910, *Schmett. Eur.* **2** : 356.

Type-species: *Tinea nanella* [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend* : 141, by monotypy.

Junior objective synonym of *Recurvaria* Haworth, 1828.

The type-species was included by Spuler as '*nanella* Hübner', and has been erroneously attributed to Hübner, [1805], *Samml. eur. Schmett.* **8**, pl. 39, fig. 267, by several authors.

HODEGIA Walsingham, 1907, *Fauna hawaii.* **1**(5) : 488.

Type-species: ***Hodegia apatela*** Walsingham, 1907, *ibid.* **1**(5) : 488, pl. 14, fig. 2, by original designation and monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Cryptophasidae [= Xyloryctidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 110).

HOLAXYRA Meyrick, 1913, *J. Bombay nat. Hist. Soc.* **22** : 176.

Type-species: ***Holaxyra ampycota*** Meyrick, 1913, *ibid.* **22** : 176, by original designation.

Placed as senior subjective synonym of *Machlotricha* Meyrick, 1912, although *Holaxyra* Meyrick, 1913, is the junior name (Janse, 1951, *Moths S. Afr.* **5** : 186). Currently considered to be a valid genus (Janse, 1960, *ibid.* **6** : 183, 185).

HOLCOPHORA Staudinger, 1871, *Berl. ent. Z.* **14** : 313.

Type-species: ***Holcophora statices*** Staudinger, 1871, *ibid.* **14** : 313, by monotypy.

Correct date of publication (1871, January, begin.) taken from distribution list, *ibid.* **14** : iii, footnote.

HOLCOPHOROIDES Matsumura, 1931, 6000 *Ill. Insects Japan-Empire* : 1084.

Type-species: ***Holcophoroides nigriceps*** Matsumura, 1931, *ibid.* : 1084, fig., by monotypy.

****HOLCOPOGON*** Staudinger, 1879, *Horae Soc. ent. ross.* **15** : 330.

Type-species: ***Holcopogon helveolellus*** Staudinger, 1879, *ibid.* **15** : 330, by original designation (*Int. Code zool. Nom.*, Article 68(a)(i)).

Correct date of publication (1879, November 1st) taken from 'Repartition des livraisons', issued with the 'Tables des matières' of volume **15.**

Incorrect type-species: *Hypsolophus bubulcellus* Staudinger, 1859, *Stett. ent. Ztg* **20** : 245, designated by Meyrick, 1925, *Genera Insect.* **184** : 199. In accordance with the *Int. Code zool. Nom.*, Article 68 (a)(i), the type-species of *Holcopogon* Staudinger, 1879, must be *H. helveolellus* Staudinger, 1879, by original designation.

Originally not placed in a family; subsequently included in the Tineidae (Kirby, 1881, *Zool. Rec.* (1879) **16** (Insecta) : 188); Gelechiidae: Gelechiinae (Rebel, 1901, *in* Staudinger & Rebel, *Cat. Lepid. palaearctischen Faunengebietes* **2** : 160); Scythrididae (Amsel, 1942, *Veröff. dt. Kolon. u. Übersee-Mus. Bremen* **3** : 224); Gelechiidae: Lecithocerinae (Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 153); currently placed in the Holcopogonidae (Gozmány, 1967, *Acta zool. hung.* **13** : 278).

H. helveolellus Staudinger, 1879, is currently considered to be a subspecies of *Hypsolophus bubulcellus* Staudinger, 1859, *Stettin. ent. Ztg* **20** : 245 (Gozmány, 1967, *Acta zool. hung.* **13** : 278).

See also: *Cyrnia* Walsingham, 1900.

HOLOPHYSIS Walsingham, 1910, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 29.

Type-species: ***Strobisia emblemella*** Clemens, 1860, *Proc. Acad. nat. Sci. Philad.* **1860** : 165 by original designation.

See also: ‡*Hoplophysis* McDunnough, 1939.

*‡*HOMALODERCES* Gaede, 1937, *Lepid. Cat.* **79** : 502, 564 [index].

Incorrect subsequent spelling of *Heteroderces* Meyrick, 1929. The name ‡*Homaloderces* apparently originated from a combination of *Homaloxestis* and *Heteroderces*.

****HOMALOXESTIS*** Meyrick, 1910, *J. Bombay nat. Hist. Soc.* **20** : 440.

Type-species: ***Homaloxestis endocoma*** Meyrick, 1910, *ibid.* **20** : 441, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 345); erroneously used in the Gelechiidae by Clarke, 1969, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **7** : 184.

See also: ‡*Hamaloxestis* Meyrick, 1931.

HOMOCHELAS Clarke, 1969, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **7** : 187.

Type-species: *Homoshelas epichthonia* Meyrick, 1935, *in* Caradja & Meyrick, *Mater. Microlepid. Fauna chin. Provinzen Kiangsu, Chekiang Hunan* : 71, by monotypy of *Homoshelas* Meyrick, 1935.

Unjustified emendation of *Homoshelas* Meyrick, 1935.

HOMOSHELAS Meyrick, 1935, *in* Caradja & Meyrick, *Mater. Microlepid. Fauna chin. Provinzen Kiangsu, Chekiang Hunan* : 70.

Type-species: ***Homoshelas epichthonia*** Meyrick, 1935, *ibid.* : 71, by monotypy.

See also: *Homochelas* Clarke, 1969.

HOMOTIMA Diakonoff, 1954, *Verh. K. ned. Akad. Wet.* (2)**50**(1) : 15.
Type-species: ***Homotima purpurata*** Diakonoff, 1954, *ibid.* (2)**50**(1) : 16, figs 553, 557, by original designation and monotypy.

‡*HOPLOPHYSIS* McDunnough, 1939, *Mem. sth. Calif. Acad. Sci.* **2**(1) : 75.
Incorrect subsequent spelling of *Holophysis* Walsingham, 1910.

HORRIDOVALVA Sattler, 1967, *Beitr. naturk. Forsch. SüdwDtl.* **26**(3) : 88.
Type-species: ***Horridovalva tenuiella*** Sattler, 1967, *ibid.* **26**(3) : 89, figs, by original designation and monotypy.

****HYALE*** Chambers, 1875, *Cincinn. Q. Jl Sci.* **2** : 241.
Type-species: ***Hyale coryliella*** Chambers, 1875, *ibid.* **2** : 242, by monotypy.
Currently considered to be a junior subjective synonym of *Menesta* Clemens, 1860 (Walsingham, 1889, *Insect Life* **2** : 154). *H. coryliella* Chambers, 1875, is currently considered to be a junior subjective synonym of *Menesta tortriciformella* Clemens, 1860, the type-species of *Menesta* Clemens, 1860 (Walsingham, 1889, *ibid.* **2** : 154).
Originally described in the 'Tineina'; subsequently included in the Gelechi[i]dae (Chambers, 1880, *J. Cincinn. Soc. nat. Hist.* **2** : 198 [legend to fig. 8]); currently placed in the Stenomidae (Busck, 1935, *Lepid. Cat.* **67** : 5).

****HYGROPLASTA*** Meyrick, 1925, *Genera Insect.* **184** : 8 [key], 244.
Type-species: ***Gelechia spoliatella*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 659, by original designation.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

HYLOGRAPTIS Meyrick, 1910, *Trans. ent. Soc. Lond.* **1910** : 450.
Type-species: ***Hylograptis thryptica*** Meyrick, 1910, *ibid.* **1910** : 451, by monotypy.

HYODECTIS Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 257 [key], 411.
Type-species: ***Hyodectis crenoides*** Meyrick, 1904, *ibid.* **29** : 411, by monotypy.

HYPATIMA Hübner, [1825], *Verz. bekannter Schmett.* : 415.
Type-species: [***Tinea***] ***conscriptella*** Hübner, [1805], *Samml. eur. Schmett.* **8**, pl. 41, fig. 283, by subsequent designation: Walsingham, 1909, *Entomologist's mon. Mag.* **45** : 48.
Correct date of publication ([1825]) taken from Opinion 150, *Opin. Decl. int. Commn zool. Nom.* **2** : 166 (1943).
Incorrect type-species: *Phalaena* (*Tinea*) *rhomboidella* Linnaeus, 1758, *Syst. Nat.* (ed. 10) **1** : 538, designated by Stephens, 1834, *Ill. Br. Ent.*, Haustellata **4** : 219. *Ph.* (*T.*) *rhomboidella* Linnaeus, 1758, is not one of the originally included nominal species and is therefore not eligible as the type-species of *Hypatima* Hübner, [1825].
Senior objective synonym of *Chelaria* Haworth, 1828. *T. conscriptella* Hübner, [1805], is currently considered to be a junior subjective synonym of *Phalaena* (*Tinea*) *rhomboidella* Linnaeus, 1758 (Gozmány, 1958, *Fauna Hung.* **40** : 166). *Hypatima* has been erroneously attributed to Stephens by several authors.
See also: *Allocota* Meyrick, 1904; *Allocotaniana* Strand, 1913; *Chelaria* Haworth, 1828; *Cymatomorpha* Meyrick, 1904; *Deuteroptila* Meyrick, 1904; *Episacta* Turner, 1919; ‡*Hypatina* Stephens, 1835; *Psoricoptera* Stainton, 1854; *Semodictis* Meyrick, 1909.

‡*HYPATINA* Stephens, 1835, *Ill. Br. Ent.*, Haustellata **4** : 422.
Incorrect subsequent spelling of *Hypatima* Hübner, [1825].

HYPELICTIS Meyrick, 1905, *J. Bombay nat. Hist. Soc.* **16** : 600.
Type-species: ***Hypelictis acrochlora*** Meyrick, 1905, *ibid.* **16** : 600, by monotypy.

HYPERECTA Meyrick, 1925, *Genera Insect.* **184** : 17 [key], 132.
Type-species: ***Strobisia enoptrias*** Meyrick, 1911, *J. Bombay nat. Hist. Soc.* **20** : 728, by original designation.

HYPEROCHTHA Meyrick, 1925, *Genera Insect.* **184** : 12 [key], 227.

Type-species: ***Onebala butyropa*** Meyrick, 1910, *J. Bombay nat. Hist. Soc.* **20** : 458, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

See also: *Abrachmia* Amsel, 1968.

HYPERSYMMOCA Chrétien, 1917, *Annls Soc. ent. Fr.* **85** : 485.

Type-species: ***Hypersymmoca faecivorella*** Chrétien, 1917, *ibid.* **85** : 485, fig., by monotypy.

Originally described in the Gelechiidae; subsequently transferred to the Oecophoridae (Meyrick, 1922, *Genera Insect.* **180** : 34).

‡*HYPOCECIS* Walsingham, 1904, *Entomologist's mon. Mag.* **40** : 215, 216 (nomen nudum).

Published without description, or indication and associated species; placed between two genera of Gelechiidae (*Cecidophaga* Walsingham, *Proactica* Walsingham). Subsequently placed as a synonym of *Sclerocecis* Chrétien, 1908 (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 115, 200).

HYPOCHASMIA Meyrick, 1929, *Exot. Microlepidopt.* **3** : 517.

Type-species: ***Hypochasmia cirrhocrena*** Meyrick, 1929, *ibid.* **3** : 517, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

HYPODRASIA Diakonoff, 1967, *Bull. U.S. natn. Mus.* **257** : 147 [key], 155.

Type-species: ***Hypodrasia acycla*** Diakonoff, 1967, *ibid.* **257** : 156, figs, by original designation and monotypy.

*‡HYPSIPELON Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 115.

Incorrect subsequent spelling of *Hypsipselon* Chrétien, 1915.

HYPSIPSELON Chrétien, 1915, *Annls Soc. ent. Fr.* **84** : 328.

Type-species: ***Hypsipselon rigidellum*** Chrétien, 1915, *ibid.* **84** : 328, fig. 4, by monotypy.

Currently considered to be a junior subjective synonym of *Cryptolechia* Zeller, 1852 (Meyrick 1922, *Genera Insect.* **180** : 196).

Originally described in the Gelechiidae; subsequently transferred to the Oecophoridae (Meyrick, 1922, *ibid.* **180** : 196).

See also: ‡*Hypsipelon* Fletcher, 1929.

HYPSOLOPHUS* Illiger, 1801, *Mag. Insektkde* **1 : 155.

Type-species: *Phalaena* (*Tinea*) *sylvella* Linnaeus, 1767, *Syst. Nat.* (ed. 12) **1**(2) : 893, by subsequent designation for *Ypsolophus* Fabricius, 1798: Desmarest, (1857), *in* Chenu, *Encycl. Hist. nat.*, Papillons nocturnes : 255.

Hypsolophus Illiger, 1801, is an unjustified emendation of *Ypsolophus* Fabricius, 1798 (Plutellidae). The name *Hypsolophus* has been used for species of Gelechiidae by Herrich-Schäffer, 1853, *Syst. Bearb. Schmett. Eur.* **5** : 42, and subsequent authors. Herrich-Schäffer's concept is erroneous because none of the species he included are congeneric with the type-species *Phalaena* (*Tinea*) *sylvella* Linnaeus, 1767. Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 115, designated *Alucita marginella* Fabricius, 1781, *Species Insect.* **2** : 307, as the type-species of '*Hypsolophus*, Herrich-Schäffer 1853', which at the same time he placed as a junior subjective synonym of *Dichomeris* Hübner, 1818.

See also: *Ypsolophus* Fabricius, 1798.

HYPTIASTIS Meyrick, 1911, *J. Bombay nat. Hist. Soc.* **20** : 733.

Type-species: ***Hyptiastis clematias*** Meyrick, 1911, *ibid.* **20** : 734, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

IDIOBELA Turner, 1919, *Proc. R. Soc. Qd* **31** : 111.
Type-species: ***Idiobela ischnoptila*** Turner, 1919, *ibid.* **31** : 111, by monotypy.
Correct date of publication (1919, December 30th) taken from original wrapper.
Currently considered to be a junior subjective synonym of *Proselotis* Meyrick, 1914 (Meyrick, 1925, *Genera Insect.* **184** : 30).

****IDIOCRATES*** Meyrick, 1909, *Trans. ent. Soc. Lond.* **1909** : 19.
Type-species: ***Idiocrates balanitis*** Meyrick, 1909, *ibid.* **1909** : 19, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Oecophoridae (Meyrick, 1922, *Genera Insect.* **180** : 180).

IDIOPHANTIS Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 257[key], 298.
Type-species: ***Idiophantis habrias*** Meyrick, 1904, *ibid.* **29** : 298, by monotypy.
Currently considered to be a junior subjective synonym of and used as the subjective replacement name for *Colobodes* Meyrick, 1904, nom. praeocc. (Meyrick, 1925, *Genera Insect.* **184** : 108).

****IDIOPTERYX*** Walsingham, 1891, *Trans. ent. Soc. Lond.* **1891** : 104.
Type-species: ***Cryptolechia obliquella*** Walsingham, 1881, *ibid.* **1881** : 254, pl. 11, fig. 22, by original designation and monotypy.
Originally described in the Gelechianae [= Gelechiidae]; subsequently included in the Oecophoridae (Janse, 1917, *Check-List S. Afr. Lepid. Heterocera* : 195); Gelechiadae [= Gelechiidae] (Janse, 1954, *Moths S. Afr.* **5** : 377); here transferred to the Lecithoceridae.
See also: *Dragmatucha* Meyrick, 1908; ‡*Idopteryx* [Anonymous], 1968.

****IDIOPTILA*** Meyrick, 1927, *Exot. Microlepidopt.* **3** : 343.
Type-species: ***Idioptila agyrtodes*** Meyrick, 1927, *ibid.* **3** : 344, by monotypy.
Currently considered to be a junior subjective synonym of *Pyramidobela* Braun, 1923, *Trans. Am. ent. Soc.* **49** : 118 (Meyrick, 1928, *Exot. Microlepidopt.* **3** : 414).
Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Hyponomeutidae [= Yponomeutidae] (Meyrick, 1928, *ibid.* **3** : 414); currently placed in the Ethmiidae (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 24).

IDIOZANCLA Turner, 1939, *Pap. Proc. R. Soc. Tasm.* **1938** : 82 (nom. praeocc.).
Type-species: *Idiozancla ignobilis* Turner, 1939, *ibid.* **1938** : 83, by monotypy.
Idiozancla Turner, 1939, is a junior homonym of *Idiozancla* Turner, 1936 (Lepidoptera: Oecophoridae); *Phobetica* Turner, 1944, was proposed as the objective replacement name.

*‡*IDOPTERYX* [Anonymous], 1968, *Zool. Rec.* (1965) **102** (Insecta) : 363.
Incorrect subsequent spelling of *Idiopteryx* Walsingham, 1891.

ILARCHES Meyrick, 1933, *Exot. Microlepidopt.* **4** : 355 (nom. praeocc.).
Type-species: *Ilarches notaula* Meyrick, 1933, *ibid.* **4** : 355, by monotypy.
Ilarches Meyrick, 1933, is a junior homonym of *Ilarches* Cantor, 1850 (Pisces). No replacement name is currently available.

ILINGIOTIS Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 275.
Type-species: ***Gelechia sevectella*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **30** : 1020, by original designation.
See also: *Sirogenes* Meyrick, 1923.

****ILIONARSIS*** Gozmány, 1959, *Annls hist.-nat. Mus. natn. hung.* **51** : 369.
Type-species: ***Ilionarsis foeldvarii*** Gozmány, 1959, *ibid.* **51** : 369, figs 5 A, B, by original designation and monotypy.
Originally described in the Scythrididae; subsequently transferred to the Holcopogonidae (Gozmány, 1967, *Acta zool. hung.* **13** : 276).

****ILLAHASIS*** Gozmány, 1959, *Acta zool. hung.* **5** : 45.
Type-species: ***Illahasis virgo*** Gozmány, 1959, *ibid.* **5** : 46, figs 2 B, C, by original designation and monotypy.

Originally described in the Gelechiidae; subsequently transferred to the Symmocidae (Gozmány, 1964, *Acta zool. hung.* **10** : 108).

ILSEOPSIS Povolný, 1965, *Acta ent. bohemoslovaca* **62** : 481.

Type-species: ***Ilseopsis peterseni*** Povolný, 1965, *ibid.* **62** : 481, figs 1, 2, by original designation and monotypy.

****INAPHA*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **30** : 999.

Type-species: ***Inapha lampronialis*** Walker, 1864, *ibid.* **30** : 1000, by monotypy.

Originally described in the [Choreutidae]; subsequently included in the Gelechiadae [= Gelechiidae] (Meyrick, 1925, *Genera Insect.* **184** : 234). Currently considered to be a junior subjective synonym of *Thubana* Walker, 1864 (Meyrick, 1925, *ibid.* **184** : 234), which automatically places *Inapha* Walker, 1864, in the Lecithoceridae. *I. lampronialis* Walker, 1864, is currently considered to be a junior subjective synonym of *Thubana bisignatella* Walker, 1864, the type-species of *Thubana* Walker, 1864 (Meyrick, 1925, *ibid.* **184** : 235).

****INDIOSPASTUS*** Gozmány, 1967, *Annls hist.-nat. Mus. natn. hung.* **59** : 353.

Type-species: ***Symmoca epenthetica*** Meyrick, 1931, *Exot. Microlepidopt.* **4** : 72, by original designation and monotypy.

The type-species was cited by Gozmány as '*Paradoris epentheticus* Meyrick'.

Originally described and currently placed in the Symmocid[ae].

INOTICA Meyrick, 1913, *Exot. Microlepidopt.* **1** : 65.

Type-species: ***Inotica gaesata*** Meyrick, 1913, *ibid.* **1** : 66, by monotypy.

Currently considered to be a junior subjective synonym of *Stomopteryx* Heinemann, 1870 (Sattler, 1968, *Dt. ent. Z.*, N.F. **15** : 123).

See also: ‡*Instica* Sharp, 1915.

‡*INSTICA* Sharp, 1915, *Zool. Rec.* (1913) **50** (12) : 386.

Incorrect subsequent spelling of *Inotica* Meyrick, 1913.

IOCHARES Meyrick, 1921, *Ann. Transv. Mus.* **8** : 81.

Type-species: ***Iochares festa*** Meyrick, 1921, *ibid.* **8** : 81, by original designation.

See also: ‡*Iocharis* Janse, 1958.

‡*IOCHARIS* Janse, 1958, *Moths S. Afr.* **6** : 142; 1963, *ibid.* **6** : 279.

Incorrect subsequent spelling of *Iochares* Meyrick, 1921.

IPHIMACHAERA Meyrick, 1931, *Exot. Microlepidopt.* **4** : 83.

Type-species: ***Iphimachaera decapitata*** Meyrick, 1931, *ibid.* **4** : 83, by monotypy.

IRENIDORA Meyrick, 1938, *in* Caradja & Meyrick, *Dt. ent. Z. Iris* **52** : 7.

Type-species: ***Irenidora serenisca*** Meyrick, 1938, *ibid.* **52** : 7, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20); Blastobasidae (Clarke, 1955, *ibid.* **1** : 21); currently placed in the Gelechiidae (Clarke, 1969, *ibid.* **7** : 207).

‡*ISCHENOPHENAX* Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).

Incorrect subsequent spelling of *Ischnophenax* Meyrick, 1931.

ISCHNOCRASPEDUS Janse, 1958, *Moths S. Afr.* **6** : 140.

Type-species: ***Megacraspedus peracuta*** Meyrick, 1920, *Ann. S. Afr. Mus.* **17** : 281, by original designation and monotypy.

ISCHNODORIS Meyrick, 1911, *J. Bombay nat. Hist. Soc.* **20** : 726.

Type-species: ***Ischnodoris sigalota*** Meyrick, 1911, *ibid.* **20** : 726, by monotypy.

ISCHNOPHENAX Meyrick, 1931, *Exot. Microlepidopt.* **4** : 125.

Type-species: ***Ischnophenax streblotis*** Meyrick, 1931, *ibid.* **4** : 126, by monotypy.

Originally described in the Oecophoridae; subsequently transferred to the Gelechiidae (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21, 23).

See also: ‡*Ischenophenax* Clarke, 1955.

ISCHNOPHYLLA Janse, 1963, *Moths S. Afr.* **6** : 246, 278 [key].
Type-species: **Ischnophylla similicolor** Janse, 1963, *ibid.* **6** : 247, figs, by original designation and monotypy.

ISEMBOLA Meyrick, 1926, *Exot. Microlepidopt.* **3** : 271.
Type-species: **Isembola diasticta** Meyrick, 1926, *ibid.* **3** : 271, by monotypy.

ISOCHASTA Meyrick, 1886, *Trans. N.Z. Inst.* **18** : 162 [key], 163.
Type-species: **Isochasta paradesma** Meyrick, 1886, *ibid.* **18** : 163, by monotypy.
Currently considered to be a junior subjective synonym of *Aristotelia* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 41).

ISOPHRICTIS Meyrick, 1917, *Entomologist's mon. Mag.* **53** : 113.
Type-species: **Tinea striatella** [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend* : 135, by original designation.
The type-species was cited by Meyrick as '*striatella* Hübn.', and has been erroneously attributed to Hübner, [1805], *Samml. eur. Schmett.* **8**, pl. 42, fig. 288, by several authors.

*****ISOTYPA*** Janse, 1954, *Moths S. Afr.* **5** : 382, 453 [key]; 383 [*Isytypa*, incorrect (multiple) original spelling].
Type-species: **Isotypa discopuncta** Janse, 1954, *ibid.* **5** : 383, figs, by original designation and monotypy.
The type-species was cited by Janse as '*discopunctata*', which is an incorrect (multiple) original spelling. There is clear evidence that the spelling ‡*discopunctata* is an inadvertent error. It is used only once on p. 382, while the spelling *discopuncta* is used on pp. 383, 384, 461 [index], and on pls 166, 169, 188, and 192.
Originally described in the Gelechiadae [= Gelechiidae]; here transferred to the Lecithoceridae.

*‡*ISYTYPA* Janse, 1954, *Moths S. Afr.* **5** : 383.
Incorrect (multiple) original spelling of *Isotypa* Janse, 1954. There is clear evidence that the spelling ‡*Isytypa* is an inadvertent error. It is used only once on p. 383 while the spelling *Isotypa* is used on pp. 382, 453 [key], 462 [index], and on pls 166, 169, 188, and 192.

ISTRIANIS Meyrick, 1918, *Exot. Microlepidopt.* **2** : 130.
Type-species: **Istrianis crauropa** Meyrick, 1918, *ibid.* **2** : 130, by monotypy.
In Gaede, 1937, *Lepid. Cat.* **79** : 108, the date of publication is cited as 1910, which is a typographical error.

****IULACTIS*** Meyrick, 1918, *Exot. Microlepidopt.* **2** : 145.
Type-species: **Iulactis semifusca** Meyrick, 1918, *ibid.* **2** : 145, by original designation.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Xyloryctinae [= Xyloryctidae] (Turner, 1919, *Proc. R. Soc. Qd* **31** : 119).

IULOTA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 257 [key], 283.
Type-species: **Iulota ithyxyla** Meyrick, 1904, *ibid.* **29** : 283, by original designation.

IWARUNA Gozmány, 1957, *Acta zool. hung.* **3** : 125.
Type-species: **Iwaruna heringi** Gozmány, 1957, *ibid.* **3** : 126, figs 6 A–C, by original designation and monotypy.

KAHELIA Turati, 1922, *Atti Soc. ital. Sci. nat.* **61** : 175.
Type-species: **Anacampsis bivittella** Chrétien, 1915, *Annls Soc. ent. Fr.* **84** : 324, by monotypy.
Currently considered to be a junior subjective synonym of *Stomopteryx* Heinemann, 1870 (Gaede, 1937, *Lepid. Cat.* **79** : 321 [erroneously marked as nomen nudum]).

KARWANDANIA Amsel, 1959, *Stuttg. Beitr. Naturk.* **28** : 30.
Type-species: **Karwandania chimabacchella** Amsel, 1959, *ibid.* **28** : 31, figs, by original designation and monotypy.

KEIFERIA Busck, 1939, *Proc. U.S. natn. Mus.* **86** : 568 [keys], 571.
Type-species: ***Phthorimaea lycopersicella*** Busck, 1928, *Proc. Hawaii. ent. Soc.* **7** : 171, figs, by original designation.
P. lycopersicella Busck, 1928, is currently considered to be a junior subjective synonym of *Eucatoptus lycopersicella* Walsingham, 1897, *Proc. zool. Soc. Lond.* **1897** : 71 (Povolný, 1967, *Acta ent. Mus. natn. Pragae* **37** : 100).

****KERTOMESIS*** Gozmány, 1962, *Acta zool. hung.* **8** : 39.
Type-species: ***Paradoris anaphracta*** Meyrick, 1907, *J. Bombay nat. hist. Soc.* **17** : 740, by original designation.
Originally described in the Gelechiidae; subsequently transferred to the Symmocidae (Gozmány, 1965, *Annls hist.-nat. Mus. natn. hung.* **57** : 423).
See also: *Paradoris* Meyrick, 1907.

KIWAIA Philpott, 1930, *Rec. Canterbury Mus.* **3** : 248.
Type-species: ***Kiwaia jeanae*** Philpott, 1930, *ibid.* **3** : 249, by original designation and monotypy.

‡*KLAUSSATLERIA* Căpuşe, 1968, *Ent. Ber., Amst.* **28** : 80.
Incorrect (multiple) original spelling of *Klaussattleria* Căpuşe, 1968.

KLAUSSATTLERIA Căpuşe, 1968, *Ent. Ber., Amst.* **28** : 80 (objective replacement name for *Pseudotelphusa* Janse, 1958).
Type-species: *Telphusa probata* Meyrick, 1909, *Ann. Transv. Mus.* **2** : 11, pl. 4, fig. 4, by original designation for *Pseudotelphusa* Janse, 1958.
Unnecessary objective replacement name for *Pseudotelphusa* Janse, 1958, which is not a junior homonym of *Pseudothelphusa* Saussure, 1857 (Crustacea). ‡*Pseudotelphusa* Marschall, 1873, is an incorrect subsequent spelling of *Pseudothelphusa* Saussure, 1857, and is therefore invalid and unavailable for purposes of homonymy.
See also: ‡*Klaussatleria* Căpuşe, 1968; *Sattleria* Căpuşe, 1968.

KLIMESCHIOPSIS Povolný, 1967, *Acta ent. Mus. natn. Pragae* **37** : 191.
Type-species: ***Gelechia discontinuella*** Rebel, 1899, *Verh. zool.-bot. Ges. Wien* **49** : 178, by original designation.

****KULLASHARA*** Gozmány, 1963, *Acta zool. hung.* **9** : 116.
Type-species: ***Symmoca kalifella*** Amsel, 1949, *Bull. Soc. Fouad I. Ent.* **33** : 319, pl. 8, fig. 56, by original designation and monotypy.
The type-species was cited by Gozmány as '*Eremica kalifella* (Amsel, 1950)'.
Originally described and currently placed in the Symmocidae.

LACHARISSA Meyrick, 1937, *Exot. Microlepidopt.* **5** : 93.
Type-species: ***Lacharissa tanyzancla*** Meyrick, 1937, *ibid.* **5** : 94, by monotypy.

LACHNOSTOLA Meyrick, 1918, *Ann. Transv. Mus.* **6** : 22.
Type-species: ***Lachnostola amphizeucta*** Meyrick, 1918, *ibid.* **6** : 22, by monotypy.

LACISTODES Meyrick, 1921, *Ann. Transv. Mus.* **8** : 92.
Type-species: ***Lacistodes tauropis*** Meyrick, 1921, *ibid.* **8** : 92, by monotypy.

LAMPROTES Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 309 (nom. praeocc.).
Type-species: *Tinea atrella* [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend* : 140, by subsequent designation: Walsingham, 1909, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 23.
The type-species was included by Heinemann as '*atrella* Hw.' and cited by Walsingham as '*Tinea atrella* (Hb. ?) Hw.'.
Lamprotes Heinemann, 1870, is a junior homonym of *Lamprotes* R.L., 1817 (Lepidoptera: Noctuidae); *Eulamprotes* Bradley, 1971, was proposed as the objective replacement name. Junior subjective synonym of *Aristotelia* Hübner, [1825] (Walsingham, 1907, *Fauna hawaii.* **1**(5) : 478).
T. atrella has been attributed by most authors to Haworth, 1828, *Lepid. Br.* : 567. Haworth

attributed it to Hübner, [1805], *Samml. eur. Schmett.*, **8**, pl. 40, fig. 278. Hübner, [1825], *Verz. bekannter Schmett.* : 420, attributed the name to Schiffermüller.
See also: *Argyritis* Heinemann, 1870.

LANCEOPENNA Janse, 1950, *Moths S. Afr.* **5** : 124.
Type-species: ***Lanceopenna pseudogaleotis*** Janse, 1950, *ibid.* **5** : 125, figs, by original designation.

LANCEOPTERA Janse, 1960, *Moths S. Afr.* **6** : 181.
Type-species: ***Lanceoptera panochra*** Janse, 1960, *ibid.* **6** : 181, figs, by original designation and monotypy.

LARCOPHORA Meyrick, 1925, *Genera Insect.* **184** : 5 [key], 241.
Type-species: ***Onebala sophronistis*** Meyrick, 1918, *Exot. Microlepidopt.* **2** : 112, by original designation and monotypy.

‡*LARUPSIA* Soffner, 1967, *Mitt. münch. ent. Ges.* **57** : 117.
Incorrect subsequent spelling of *Lerupsia* Riedl, 1965.

LASIARCHIS Meyrick, 1937, *Exot. Microlepidopt.* **5** : 92.
Type-species: ***Lasiarchis elaeoxyla*** Meyrick, 1937, *ibid.* **5** : 92, by monotypy.
L. elaeoxyla Meyrick, 1937, is currently considered to be a junior subjective synonym of *Nothris pycnodes* Meyrick, 1909, *Ann. Transv. Mus.* **2** : 17, pl. 5, fig. 9 (Janse, 1958, *Moths S. Afr.* **6** : 50).

LATA Kieffer & Jörgensen, 1910, *Zentbl. Bakt. ParasitKde* (2. Abt.) **27** : 398.
Type-species: ***Tecia (Lata) kiefferi*** Kieffer & Jörgensen, 1910, *ibid.* **27** : 398, by monotypy.
Originally proposed as a subgenus of *Tecia* Kieffer & Jörgensen, 1910. *Lata* and *T. (L.) kiefferi* originated from Strand but were used and unintentionally made nomenclaturally available by Kieffer & Jörgensen prior to the proposal and description by Strand, 1911, *Berl. ent. Z.* **55** : 167.

LATHONTOGENUS Walsingham, 1897, *Proc. zool. Soc. Lond.* **1897** : 87.
Type-species: ***Lathontogenus adustipennis*** Walsingham, 1897, *ibid.* **1897** : 88, by original designation and monotypy.
Currently considered to be a junior subjective synonym of *Brachyacma* Meyrick, 1886 (Meyrick, 1925, *Genera Insect.* **184** : 168). *L. adustipennis* Walsingham, 1897, is currently considered to be a junior subjective synonym of *Gelechia palpigera* Walsingham, 1891, *Trans. ent. Soc. Lond.* **1891** : 94, pl. 4, fig. 31 (Walsingham, 1915, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 409).
See also: ‡*Lathontogonus* Diakonoff, 1967; *Paraspistes* Meyrick, 1905.

‡*LATHONTOGONUS* Diakonoff, 1967, *Bull. U.S. natn. Mus.* **257** : 157.
Incorrect subsequent spelling of *Lathontogenus* Walsingham, 1897.

LATROLOGA Meyrick, 1918, *Exot. Microlepidopt.* **2** : 132.
Type-species: ***Latrologa aoropis*** Meyrick, 1918, *ibid.* **2** : 132, by monotypy.

****LECITHOCERA*** Herrich-Schäffer, 1853, *Syst. Bearb. Schmett. Eur.* **5** : 11 [key], 45, pl. Microlepid. XII, figs 10, 11.
Type-species: ***Carcina luticornella*** Zeller, 1839, *Isis, Leipzig* **1839** : 197, by monotypy.
On pp. 11 [key] and 45 without included species. In the legend to pl. Microlepid. XII the species is cited as '*Lecithocera luteicornella*', but without an author. On p. 207 (1854) the species is cited as '*Lecithocera luticornella* F.R.–Zell.'.
Originally not placed in a family; subsequently included in the Gelechi[i]dae (Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 361); Gelechiidae: Lecithocerinae (Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 153); currently placed in the Lecithoceridae.
See also: *Andusia* Walker, 1866; *Macrotona* Meyrick, 1904; *Patouissa* Walker, 1864; *Siovata* Walker, 1866; *Tirasia* Walker, 1864; *Tiriza* Walker, 1864; *Titana* Walker, 1864.

***LEILAPTERA** Gozmány, 1963, *Acta zool. hung.* **9** : 127.

Type-species: ***Eremica lithochroma*** Walsingham, 1904, *Entomologist's mon. Mag.* **40** : 271, by original designation and monotypy.

Originally described and currently placed in the Symmocidae.

LEISTOGENES Meyrick, 1927, *Exot. Microlepidopt.* **3** : 363.

Type-species: ***Leistogenes rebellis*** Meyrick, 1927, *ibid.* **3** : 363, by monotypy.

Originally described in the Xyloryctidae; subsequently transferred to the Gelechiidae (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 18).

‡*LEOBATES* Amsel, 1955, *Z. wien. ent. Ges.* (40. Jg) **66** : 279.

Incorrect subsequent spelling of *Leobatus* Walsingham, 1904.

LEOBATUS Walsingham, 1904, *Entomologist's mon. Mag.* **40** : 220.

Type-species: ***Leobatus fagoniae*** Walsingham, 1904, *ibid.* **40** : 221, by original designation and monotypy.

Currently considered to be a junior subjective synonym of *Rhynchopacha* Staudinger, 1871 (Sattler, 1968, *Dt. ent. Z.*, N.F. **15** : 111).

See also: ‡*Leobates* Amsel, 1955.

LEPTOGENEIA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 257 [key], 412.

Type-species: ***Leptogeneia bicristata*** Meyrick, 1904, *ibid.* **29** : 413, by monotypy.

LERUPSIA Riedl, 1965, *Polskie Pismo ent.* **35** : 461.

Type-species: ***Lerupsia soffneri*** Riedl, 1965, *ibid.* **35** : 461, figs 61, 62, 80, by original designation and monotypy.

Currently considered to be a junior subjective synonym of *Gnorimoschema* Busck, 1900 (Sattler, 1968, *Dt. ent. Z.*, N.F. **15** : 118).

Originally described in the Momphidae; subsequently transferred to the Gelechiidae (Sattler, 1968, *Dt. ent. Z.*, N.F. **15** : 118).

See also: ‡*Larupsia* Soffner, 1967.

LEUCE Chambers, 1875, *Can. Ent.* **7** : 51 (objective replacement name for *Naera* Chambers, 1875).

Type-species: *Naera fuscocristatella* Chambers, 1875, *ibid.* **7** : 9, by monotypy of *Naera* Chambers, 1875.

Unnecessary replacement name. *Naera* Chambers, 1875, is not a junior homonym.

LEUCOGONIA Meyrick, 1929, *Exot. Microlepidopt.* **3** : 504 (nom. praeocc.).

Type-species: *Parasia subsimella* Clemens, 1860, *Proc. Acad. nat. Sci. Philad.* **1860** : 173, by original designation and monotypy.

Leucogonia Meyrick, 1929, is a junior homonym of *Leucogonia* Hampson, 1910 (Lepidoptera: Noctuidae); *Leucogoniella* Fletcher, 1940, was proposed as the objective replacement name.

LEUCOGONIELLA Fletcher, 1940, *Entomologist's Rec. J. Var.* **52** : 18 (objective replacement name for *Leucogonia* Meyrick, 1929, nom. praeocc.).

Type-species: ***Parasia subsimella*** Clemens, 1860, *Proc. Acad. nat. Sci. Philad.* **1860** : 173, by original designation for and monotypy of *Leucogonia* Meyrick, 1929.

LEUCOPHYLLA Janse, 1960, *Moths S. Afr.* **6** : 202.

Type-species: ***Leucophylla nigribasis*** Janse, 1960, *ibid.* **6** : 203, figs, by original designation and monotypy.

LEURONOMA Meyrick, 1918, *Ann. Transv. Mus.* **6** : 16.

Type-species: ***Leuronoma chlorotoma*** Meyrick, 1918, *ibid.* **6** : 16, by original designation.

LEUROPALPA Janse, 1960, *Moths S. Afr.* **6** : 186.

Type-species: ***Holaxyra reducta*** Janse, 1951, *ibid.* **5** : 188 [key], 189, figs, by original designation and monotypy.

LEUROZANCLA Turner, 1933, *Trans. R. Soc. S. Aust.* **57** : 173.

Type-species: ***Leurozancla humilis*** Turner, 1933, *ibid.* **57** : 173, by monotypy.

LEVIPTERA Janse, 1954, *Moths S. Afr.* **5** : 342.

Type-species: ***Lecithocera lucernata*** Meyrick, 1913, *Ann. Transv. Mus.* **3** : 294, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 345).

LEXIARCHA Meyrick, 1916, *Exot. Microlepidopt.* **1** : 590.

Type-species: ***Lexiarcha galactopa*** Meyrick, 1916, *ibid.* **1** : 590, by monotypy.

LIMENARCHIS Meyrick, 1926, *Exot. Microlepidopt.* **3** : 288.

Type-species: ***Limenarchis zonodeta*** Meyrick, 1926, *ibid.* **3** : 288, by monotypy.

LIOCLEPTA Meyrick, 1922, *Trans. ent. Soc. Lond.* **1922** : 115.

Type-species: ***Lioclepta complanata*** Meyrick, 1922, *ibid.* **1922** : 116, by monotypy.

Junior subjective synonym of *Thrypsigenes* Meyrick, 1914 (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20); currently considered to be a valid genus (Clarke, 1969, *ibid.* **7** : 223).

LIOZANCLA Turner, 1919, *Proc. R. Soc. Qd* **31** : 127.

Type-species: ***Liozancla holophaea*** Turner, 1919, *ibid.* **31** : 127, by monotypy.

Correct date of publication (1919, December 30th) taken from original wrapper.

Currently considered to be a junior subjective synonym of *Scalideutis* Meyrick, 1906, *J. Bombay nat. Hist. Soc.* **17** : 409 (Meyrick, 1922, *Genera Insect.* **180** : 147). *L. holophaea* Turner, 1919, is currently considered to be a junior subjective synonym of *Scalideutis cocytias* Meyrick, 1915, *Exot. Microlepidopt.* **1** : 307 (Meyrick, 1922, *Genera Insect.* **180** : 147).

Originally described in the Gelechianae [= Gelechiidae]; subsequently included in the Oecophoridae (Meyrick, 1922, *ibid.* **180** : 147). *Scalideutis* Meyrick, 1906, has been placed in the Cosmopterygidae [= Cosmopterigidae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21) and is here transferred to the Metachandidae.

LIPATIA Busck, 1910, *Bull. Dep. Agric. Trin.* **9** : 243.

Type-species: ***Lipatia crotalariella*** Busck, 1910, *ibid.* **9** : 244, fig., by original designation and monotypy.

Junior subjective synonym of *Lathontogenus* Walsingham, 1897 (Walsingham, 1915, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 408); currently considered to be a junior subjective synonym of *Brachyacma* Meyrick, 1886 (Meyrick, 1925, *Genera Insect.* **184** : 168). *L. crotalariella* Busck, 1910, is currently considered to be a junior subjective synonym of *Gelechia palpigera* Walsingham, 1891, *Trans. ent. Soc. Lond.* **1891** : 94 (Busck, 1914, *Proc. U.S. natn. Mus.* **47** : 10).

LITA Treitschke, 1833, *Schmett. Eur.* **9**(2) : 76.

Type-species: ***Lita zebrella*** Treitschke, 1833, *ibid.* **9**(2) : 82, by subsequent designation: Duponchel, 1838, *in* Godart, *Hist. nat. Lépid. Papillons Fr.* **11** : 19.

Erroneously recorded as a junior homonym of *Lytta* Fabricius, 1775 (Coleoptera) (Gozis, 1886, *Recherche Espèce typique quelques anciens Genres* : 26). Junior subjective synonym of *Gelechia* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 73); subgenus of *Gelechia* Hübner, [1825] (Rebel, 1901, *in* Staudinger & Rebel, *Cat. Lepid. palaearctischen Faunengebietes* **2** : 146). Rebel's concept of *Lita* Treitschke, 1833, is erroneous because none of the species he included are congeneric with the type-species *Lita zebrella* Treitschke, 1833. Currently considered to be a valid genus (Busck, 1939, *Proc. U.S. natn. Mus.* **86** : 567 and 568 [keys], 572). *L. zebrella* Treitschke, 1833, is currently considered to be a junior subjective synonym of *Tinea virgella* Thunberg, 1794, *D.D. Dissertatio ent. sistens Insecta svecica* **7** : 92, pl., fig. 10 (Rebel, 1901, *in* Staudinger & Rebel, *Cat. Lepid. palaearctischen Faunengebietes* **2** : 145).

Incorrect type-species: *Phalaena* (*Tinea*) *vittella* Linnaeus, 1758, *Syst. Nat.* (ed. 10) **1** : 538, designated by Boisduval, 1836, *Hist. nat. Insect.*, Lepid. **1** : 138, as '*Tin. vitella*, H.'. Treitschke, 1833, *Schmett. Eur.* **9**(2) : 88, included '*T. vitella* Hübner' as a junior subjective synonym of *Lita sisymbrella* (*Tinea sisymbrella* [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes*

Schmett. Wienergegend : 140). Boisduval in his lengthy Introduction, up to page 154, reviewed earlier classifications and designated up to four different type-species for each generic name. In his 'Exposé de notre méthode', from page 155–690, no type-designations were made for genera he himself used. According to the provisions of the *Int. Code zool. Nom.*, Article 69 (a) (iii), a type-designation is eligible for consideration if the author states that it is the type ' . . . and if it is clear that he himself accepts it as the type-species'. Boisduval's type-designations though clearly stated do not fulfil the last requirement and so are invalid. Although Boisduval's work was well known, the type-designations contained in it have not been accepted in the past. Acceptance of Boisduval's type-designation places *Lita* Treitschke, 1833, as a junior subjective synonym of *Ypsolophus* Fabricius, 1798 (Plutellidae).

LIXODESSA Gozmány, 1957, *Acta zool. hung.* **3** : 121.

Type-species: ***Aproaerema ochrofasciella*** Toll, 1936, *Annls Mus. zool. pol.* **11** : 408, pl. 49, figs 22–25, by original designation.

****LOBOPTILA*** Turner, 1919, *Proc. R. Soc. Qd* **31** : 159.

Type-species: ***Loboptila leurodes*** Turner, 1919, *ibid.* **31** : 159, by monotypy.

Correct date of publication (1919, December 30th) taken from original wrapper.

Originally described in the Gelechianae [= Gelechiidae]; subsequently transferred to the Cryptophasidae [= Xyloryctidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 129).

LOCHARCHA Meyrick, 1923, *Exot. Microlepidopt.* **3** : 18.

Type-species: ***Locharcha emicans*** Meyrick, 1923, *ibid.* **3** : 18, by monotypy.

LOGISIS Walsingham, 1909, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 20.

Type-species: ***Logisis achroea*** Walsingham, 1909, *ibid.* **4** : 21, fig. 6, pl. 1, fig. 19, by original designation and monotypy.

LOPHAEOLA Meyrick, 1932, *Exot. Microlepidopt.* **4** : 194.

Type-species: ***Lophaeola inquinata*** Meyrick, 1932, *ibid.* **4** : 195, by monotypy.

LOPHOZANCLA Turner, 1933, *Trans. R. Soc. S. Aust.* **57** : 175 (nom. praeocc.).

Type-species: *Lophozancla stenochorda* Turner, 1933, *ibid.* **57** : 175, by monotypy.

Lophozancla Turner, 1933, is a junior homonym of *Lophozancla* Turner, 1932 (Lepidoptera: Noctuidae); *Phaeotypa* Turner, 1944, was proposed as the objective replacement name.

LUTILABRIA Povolný, 1965, *Acta ent. bohemoslovaca* **62** : 482.

Type-species: ***Gelechia lutilabrella*** Mann, 1857, *Wien. ent. Mschr.* **1** : 179, by original designation and monotypy.

LYSIPATHA Meyrick, 1926, *Exot. Microlepidopt.* **3** : 289.

Type-species: ***Lysipatha cyanoschista*** Meyrick, 1926, *ibid.* **3** : 289, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20); currently placed in the Gelechiidae (Clarke, 1969, *ibid.* **7** : 228).

MACHLOTRICHA Meyrick, 1912, *Ann. S. Afr. Mus.* **10** : 61.

Type-species: ***Machlotricha caeca*** Meyrick, 1912, *ibid.* **10** : 62, by monotypy.

Placed as junior subjective synonym of *Holaxyra* Meyrick, 1913, although *Machlotricha* Meyrick, 1912, is the senior name (Janse, 1951, *Moths S. Afr.* **5** : 186). Currently considered to be a valid genus (Janse, 1960, *ibid.* **6** : 183).

MACRACAENA Common, 1958, *Aust. J. Zool.* **6** : 271 [key], 300; 268, 270, 271 [*Metacaena*, incorrect (multiple) original spelling].

Type-species: ***Macracaena adela*** Common, 1958, *ibid.* **6** : 300, figs, by original designation and monotypy.

Macracaena is to be considered the correct original spelling as Common on p. 300 cites the derivation of the name from the Greek.

MACRENCHES Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 259 [key], 306.

Type-species: ***Macrenches eurybatis*** Meyrick, 1904, *ibid.* **29** : 306 [key], 307, by original designation.

***MACRERNIS** Meyrick, 1887, *Trans. ent. Soc. Lond.* **1887** : 275.
Type-species: ***Macrernis heliapta*** Meyrick, 1887, *ibid.* **1887** : 275, by monotypy.
Junior subjective synonym of *Frisilia* Walker, 1864 (Meyrick, 1925, *Genera Insect.* **184** : 213).
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

MACROCALCARA Janse, 1951, *Moths S. Afr.* **5** : 237.
Type-species: ***Apatetris undina*** Meyrick, 1921, *Ann. Transv. Mus.* **8** : 64, by original designation and monotypy.

MACROCERAS Staudinger, 1876, *in* Kalchberg, *Stettin. ent. Ztg* **37** : 150 (nom. praeocc.).
Type-species: *Macroceras oecophila* Staudinger, 1876, *ibid.* **37** : 150, by monotypy.
Macroceras Staudinger, 1876, is a junior homonym of *Macroceras* Semper, 1870 (Mollusca).
Currently considered to be a senior subjective synonym of *Oecia* Walsingham, 1897, which is used as the subjective replacement name for *Macroceras* Staudinger, 1876, nom. praeocc. (Meyrick, 1925, *Genera Insect.* **184** : 197). *M. oecophila* Staudinger, 1876, is currently considered to be a senior subjective synonym of *Oecia maculata* Walsingham, 1897, the type-species of *Oecia* Walsingham, 1897 (Meyrick, 1915, *Trans. ent. Soc. Lond.* **1915** : 201).

MACROTONA* Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29 : 256 [key], 405 (nom. praeocc.).
Type-species: *Macrotona sobria* Meyrick, 1904, *ibid.* **29** : 406 [key], 407, by original designation.
Macrotona Meyrick, 1904, is a junior homonym of *Macrotona* Brunner, 1893 (Orthoptera). Currently considered to be a junior subjective synonym of *Lecithocera* Herrich-Schäffer, 1853 (Meyrick, 1925, *Genera Insect.* **184** : 237).

MACROZANCLA Turner, 1919, *Proc. R. Soc. Qd* **31** : 130.
Type-species: ***Macrozancla mendica*** Turner, 1919, *ibid.* **31** : 130, by monotypy.
Correct date of publication (1919, December 30th) taken from original wrapper.
Currently considered to be a junior subjective synonym of *Dichomeris* Hübner, 1818 (Meyrick, 1925, *Genera Insect.* **184** : 174).

MAGNIFACIA Povolný, 1967, *Acta ent. Mus. natn. Pragae* **37** : 97.
Type-species: ***Phthorimaea aulorrhoa*** Meyrick, 1935, *Exot. Microlepidopt.* **4** : 560, by monotypy.
Originally proposed as a subgenus of *Scrobipalpula* Povolný, 1964.

MAGONYMPHA Meyrick, 1916, *Exot. Microlepidopt.* **1** : 572.
Type-species: ***Magonympha chrysocosma*** Meyrick, 1916, *ibid.* **1** : 572, by monotypy.

‡*MALACHOTRICHA* Chambers, 1878, *Bull. U.S. geol. geogr. Surv. Territ.* **4** : 156.
Incorrect subsequent spelling of *Malacotricha* Zeller, 1873.

‡*MALACHOTRICHE* Busck, 1903, *Proc. U.S. natn. Mus.* **25** : 912.
Incorrect subsequent spelling of *Malacotricha* Zeller, 1873.

MALACOTRICHA Zeller, 1873, *Verh. zool.-bot. Ges. Wien* **23** : 279, 280, 282.
Type-species: ***Gelechia*** (***Malacotricha***) ***bilobella*** Zeller, 1873, *ibid.* **23** : 280, pl. 4, fig. 28, by subsequent designation: Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 90.
Originally proposed as a subgenus of *Gelechia* Hübner, [1825]. Junior subjective synonym of *Trichotaphe* Clemens, 1860 (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 505); currently considered to be a junior subjective synonym of *Dichomeris* Hübner, 1818 (Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 87). *G. bilobella* Zeller, 1873, is currently considered to be a junior subjective synonym of *Trichotaphe setosella* Clemens, 1860, the type-species of *Trichotaphe* Clemens, 1860 (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 506).
See also: ‡*Malachotricha* Chambers, 1878; ‡*Malachotriche* Busck, 1903; ‡*Malacotriche* Busck, 1903.

‡*MALACOTRICHE* Busck, 1903, *Proc. U.S. natn. Mus.* **25** : 906, 911–912.
Incorrect subsequent spelling of *Malacotricha* Zeller, 1873.

‡*MANNODIA* Busck, 1908, *Can. Ent.* **40** : 136.
Incorrect subsequent spelling of *Nannodia* Heinemann, 1870.

MAPA Strand, 1911, *Berl. ent. Z.* **55** : 170.

Type-species: ***Mapa cordillerella*** Strand, 1911, *ibid.* **55** : 171, figs 7–9, by original designation and monotypy.

Junior subjective synonym of *Cerostoma* Latreille, 1802 (Meyrick, 1914, *Lepid. Cat.* **19** : 52); currently considered to be a junior subjective synonym of *Ypsolophus* Fabricius, 1798.

Originally described in the Gelechiidae; subsequently transferred to the Plutellidae (Meyrick, 1914, *ibid.* **19** : 52).

‡*MEGACRASPEDAS* Barnes & McDunnough, 1917, *Check List Lepid. boreal Am.* : 154.
Incorrect subsequent spelling of *Megacraspedus* Zeller, 1839.

MEGACRASPEDUS Zeller, 1839, *Isis, Leipzig* **1839** : 189.

Type-species: ***Ypsolophus*** (***Megacraspedus***) ***dolosellus*** Zeller, 1839, *ibid.* **1839** : 190, by subsequent designation: Walsingham, 1909, *Biologia cent.-am.*, *Zool.*, Lepid.-Heterocera **4** : 21.

The type-species was included by Zeller as '*dolosellus* FR.' [= Fischer von Röslerstamm]. Originally proposed as a subgenus of *Ypsolophus* Fabricius sensu Zeller, 1839.

See also: *Autoneda* Busck, [1903]; ‡*Megacraspedas* Barnes & McDunnough, 1917 ; *Neda* Chambers, 1874; *Pycnobathra* Lower, 1901; *Toxoceras* Chrétien, 1915.

MEGALOCYPHA Janse, 1960, *Moths S. Afr.* **6** : 196.

Type-species: ***Megalocypha polioptera*** Janse, 1960, *ibid.* **6** : 197, figs, by original designation and monotypy.

M. polioptera Janse, 1960, is currently considered to be a junior subjective synonym of *Phthorimaea microcasis* Meyrick, 1929, *Exot. Microlepidopt.* **3** : 532 (Povolný, 1964, *Dt. ent. Z.*, N.F. **11** : 433), which is the objective replacement name for *Gelechia micradelpha* Walsingham, 1900, *Entomologist's mon. Mag.* **36** : 217, nom. praeocc., junior primary homonym of *Gelechia micradelpha* Lower, 1897, *Trans. R. Soc. S. Aust.* **21** : 56 (*Crocanthes*).

MEGASYMMOCA Gozmány, 1963, *Acta zool. hung.* **9** : 78.

Type-species: ***Megasymmoca forsteri*** Gozmány, 1963, *ibid.* **9** : 80, figs 13, 14, by original designation.

Currently considered to be a junior subjective synonym of *Mylothra* Meyrick, 1907 (Gozmány, 1965, *Annls hist.-nat. Mus. natn. hung.* **57** : 423).

Originally described and currently placed in the Symmocidae.

MELITOXESTIS Meyrick, 1921, *Ann. Transv. Mus.* **8** : 75.
Type-species: ***Melitoxestis centrotypa*** Meyrick, 1921, *ibid.* **8** : 76, by monotypy.

MELITOXOIDES Janse, 1958, *Moths S. Afr.* **6** : 28.
Type-species: ***Gelechia cophias*** Meyrick, 1913, *Ann. Transv. Mus.* **3** : 292, by original designation.

MENECRATISTIS Meyrick, 1933, *Exot. Microlepidopt.* **4** : 358.
Type-species: ***Menecratistis sciaula*** Meyrick, 1933, *ibid.* **4** : 358, by monotypy.

MENESTA Clemens, 1860, *Proc. Acad. nat. Sci. Philad.* **1860** : 213.

Type-species: ***Menesta tortriciformella*** Clemens, 1860, *ibid.* **1860** : 213, by monotypy.

Originally described in the 'Tineina'; subsequently included in the Gelechiidae (Riley, 1891, *in* Smith, *List Lepid. boreal Am.* : 99); Cryptophasidae [= Xyloryctidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 112, 137); currently placed in the Stenomidae (Busck, 1935, *Lepid. Cat.* **67** : 5).

See also: *Hyale* Chambers, 1875 ; ‡*Menestra* Chambers, 1878.

‡*MENESTRA* Chambers, 1878, *Bull. U.S. geol. geogr. Surv. Territ.* **4** : 150 [under *Hyale*], 157.
Incorrect subsequent spelling of *Menesta* Clemens, 1860.

MERIDORMA Meyrick, 1925, *Genera Insect.* **184** : 15 [key], 31.

Type-species: ***Ptocheuusa thrombodes*** Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 232, by original designation and monotypy.

MERIMNETRIA Walsingham, 1907, *Fauna hawaii.* **1**(5) : 482.

Type-species: ***Merimnetria flaviterminella*** Walsingham, 1907, *ibid.* **1**(5) : 482, pl. 13, fig. 26, by original designation and monotypy.

*****MEROCRATES*** Meyrick, 1931, *Exot. Microlepidopt.* **4** : 62.

Type-species: ***Merocrates themelias*** Meyrick, 1931, *ibid.* **4** : 62, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

‡*MESOPHLEBS* Constant, 1892, *Bull. Soc. Hist. nat. Autun* **5** : 70.

Incorrect subsequent spelling of *Mesophleps* Hübner, [1825].

MESOPHLEPS Hübner, [1825], *Verz. bekannter Schmett.* : 406.

Type-species: ***Tinea silacella*** Hübner, 1796, *Samml. eur. Schmett.* **8** : 37, pl. 17, fig. 117, by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 168.

Correct date of publication ([1825]) taken from Opinion 150, *Opin. Decl. int. Commn zool. Nom.* **2** : 166 (1943).

See also: ‡*Mesophlebs* Constant, 1892.

METABOLAEA Meyrick, 1923, *Exot. Microlepidopt.* **3** : 32.

Type-species: ***Metabolaea chlorophthalma*** Meyrick, 1923, *ibid.* **3** : 32, by monotypy.

‡*METACAENA* Common, 1958, *Aust. J. Zool.* **6** : 268, 270, 271.

Incorrect (multiple) original spelling of *Macracaena* Common, 1958. *Macracaena* is to be considered the correct original spelling as Common on p. 300 cites the derivation of the name from the Greek.

METANARSIA Staudinger, 1871, *Berl. ent. Z.* **14** : 314.

Type-species: ***Metanarsia modesta*** Staudinger, 1871, *ibid.* **14** : 314, by monotypy.

Correct date of publication (1871, January, begin.) taken from distribution list, *ibid.* **14** : iii, footnote.

See also: *Parametanarsia* Gerasimov, 1930.

METAPLATYNTIS Meyrick, 1938, *Explor. Parc natn. Albert Miss. G. F. de Witte* **14** : 16.

Type-species: ***Metaplatyntis synclepta*** Meyrick, 1938, *ibid.* **14** : 16, by monotypy.

METATACTIS Janse, 1949, *Moths S. Afr.* **5** : 53.

Type-species: ***Metatactis griseobrunnea*** Janse, 1949, *ibid.* **5** : 54, figs, by original designation.

METEORISTIS Meyrick, 1923, *Exot. Microlepidopt.* **3** : 27.

Type-species: ***Meteoristis religiosa*** Meyrick, 1923, *ibid.* **3** : 28, by monotypy.

METOPLEURA Busck, 1912, *Proc. ent. Soc. Wash.* **14** : 83.

Type-species: ***Metopleura potosi*** Busck, 1912, *ibid.* **14** : 84, by original designation and monotypy.

METZNERIA Zeller, 1839, *Isis, Leipzig* **1839** : 197.

Type-species: ***Gelechia (Metzneria) paucipunctella*** Zeller, 1839, *ibid.* **1839** : 202, by subsequent designation: Walsingham & Durrant, 1899, *Entomologist's mon. Mag.* **35** : 200.

The type-species was included by Zeller as '*paucipunctella* Mtzn.' [= Metzner]. Originally proposed as a subgenus of *Gelechia* Hübner, [1825]. Currently considered to be a junior subjective synonym of and used as the subjective replacement name for *Cleodora* Stephens, 1834, nom. praeocc. (Walsingham & Durrant, 1899, *Entomologist's mon. Mag.* **35** : 199).

Erroneously included in the Scythri[d]idae by Amsel, 1949, *Bull. Soc. Fouad I. Ent.* **33** : 321.

See also: *Cleodora* Stephens, 1834; *Parasia* Duponchel, [1846].

‡*MICOSETIA* Keifer, 1937, *Bull. Calif. Dep. Agric.* **26** : 182.

Incorrect subsequent spelling of *Microsetia* Stephens, 1829.

MICROCRASPEDUS Janse, 1958, *Moths S. Afr.* **6** : 137.

Type-species: ***Megacraspedus brachypogon*** Meyrick, 1937, *Exot. Microlepidopt.* **5** : 91, by original designation.

Currently considered to be a junior subjective synonym of *Ephysteris* Meyrick, 1908 (Povolný, 1964, *Dt. ent. Z.*, N.F. **11** : 431).

MICROGONIA* Popescu-Gorj & Căpuşe, 1965, *Revue roum. Biol.* **10 : 400 (nom. praeocc.).

Type-species: *Microgonia whalleyi* Popescu-Gorj & Căpuşe, 1965, *ibid.* **10** : 401, figs, by original designation and monotypy.

Microgonia Popescu-Gorj & Căpuşe, 1965, is a junior homonym of *Microgonia* Herrich-Schäffer, 1855 (Lepidoptera: Geometridae); currently considered to be a junior subjective synonym of *Apatema* Walsingham, 1900, **syn. n.** Originally described in the 'Gelechioidea', but associated with genera of Symmocidae. Currently placed in the Symmocidae.

MICROLECHIA Turati, 1924, *Atti Soc. ital. Sci. nat.* **63** : 162.

Type-species: ***Microlechia chretieni*** Turati, 1924, *ibid.* **63** : 163, pl. 6, fig. 5, by monotypy.

Junior subjective synonym of *Recurvaria* Haworth, 1828 (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11**, 'Further Addenda and Corrigenda': [ii] [loose supplement sheet issued with volume **11**]).

MICROSETIA Stephens, 1829, *Nomencl. Br. Insect.* : 49.

Type-species: *Phalaena* (*Tinea*) *stipella* Linnaeus sensu Hübner [= ***Tinea sexguttella*** Thunberg, 1794, *D.D. Dissertatio ent. sistens Insecta svecica* **7** : 88, fig. 6], by subsequent designation: Westwood, 1840, *Introd. mod. Classif. Insects* **2**, *Synopsis Genera Br. Insects* : 112.

The type-species was included by Stephens as '*Stipella*, Hüb.' and cited by Westwood as '*T. stipella* Hubn.'. *Tinea stipella*: Hübner, 1796, *Samml. eur. Schmett.* **8** : 57, pl. 20, fig. 138, is a misidentification of *Phalaena* (*Tinea*) *stipella* Linnaeus, 1758, *Syst. Nat.* (ed. 10) **1** : 539 (Oecophoridae); the valid name for the misidentified type-species is *Tinea sexguttella* Thunberg, 1794 (Benander, 1946, *Opusc. ent.* **11** : 44, 78).

The type-designations by Westwood, 1840, *Introd. mod. Classif. Insects* **2**, *Synopsis Genera Br. Insects*, have been validated by the International Commission on Zoological Nomenclature, 1922, Opinion 71, *Smithson. misc. Collns* **73** : 16–18.

Incorrect type-species: *Tinea guttella* Hübner, 1796, *Samml. eur. Schmett.* **8** : 65, pl. 26, fig. 176 [junior primary homonym of *Tinea guttella* Fabricius, 1781, *Species Insect.* **2** : 509 (Tineidae)], designated by Boisduval, 1836, *Hist. nat. Insect.*, Lépid. **1** : 150. Boisduval in his lengthy Introduction, up to page 154, reviewed earlier classifications and designated up to four different type-species for each generic name. In his 'Exposé de notre méthode', from page 155–690, no type-designations were made for genera he himself used. According to the provisions of the *Int. Code zool. Nom.*, Article 69 (a) (iii), a type-designation is eligible for consideration if the author states that it is the type ' . . . and if it is clear that he himself accepts it as the type-species'. Boisduval's type-designations though clearly stated do not fulfil the last requirement and so are invalid. Although Boisduval's work was well known, the type-designations contained in it have not been accepted in the past. Acceptance of Boisduval's type-designation places *Microsetia* Stephens, 1829, as a senior subjective synonym of *Elachista* Treitschke, 1833, *Schmett. Eur.* **9**(2) : 177 (Elachistidae).

Senior objective synonym of *Nannodia* Heinemann, 1870. Junior subjective synonym of *Aristotelia* Hübner, [1825] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 24, 140).

See also: *Chrysopora* Clemens, 1860; ‡*Micosetia* Keifer, 1937; ‡*Microsteia* Popescu-Gorj & Nemeş, 1965; ‡*Miorosetia* Fletcher, 1929.

‡*MICROSTEIA* Popescu-Gorj & Nemeş, 1965, *Trav. Mus. Hist. nat. 'Gr. Antipa'* **5** : 157.

Incorrect subsequent spelling of *Microsetia* Stephens, 1829.

‡*MIOROSETIA* Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 24.

Incorrect subsequent spelling of *Microsetia* Stephens, 1829.

MIRIFICARMA Gozmány, 1955, *Annls hist.-nat. Mus. natn. hung.*, S.N. **6** : 308, 309 [keys], 313.

Type-species: ***Tinea maculatella*** Hübner, 1796, *Samml. eur. Schmett.* **8** : 60, pl. 24, fig. 162 [legends to figs 161 and 162 transposed], by original designation.

Currently considered to be a junior subjective synonym of *Helina* Guenée, 1849, **syn. n.**, and therefore available as the subjective replacement name for *Helina* Guenée, 1849, nom. praeocc.

‡*MISTAX* Caradja, 1920, *Dt. ent. Z. Iris* **34** : 138.

Incorrect (multiple) original spelling of *Mystax* Caradja, 1920. According to the Greek derivation of the name *Mystax* is the correct spelling.

MNESISTEGA Meyrick, 1918, *Exot. Microlepidopt.* **2** : 101.

Type-species: ***Mnesistega talantodes*** Meyrick, 1918, *ibid.* **2** : 101, by monotypy.

****MNESTERIA*** Meyrick, 1910, *Trans. ent. Soc. Lond.* **1910** : 438.

Type-species: ***Tipha pharetrata*** Meyrick, 1905, *J. Bombay nat. Hist. Soc.* **16** : 593, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

MNIOPHAGA Pierce & Daltry, 1938, *Entomologist* **71** : 226.

Type-species: ***Gelechia similis*** Stainton, 1854, *Insecta Br.*, Lepid.: Tineina : 115, by original designation.

Currently considered to be a junior subjective synonym of *Bryotropha* Heinemann, 1870 (Kloet & Hincks, 1945, *Check List Br. Insects* : 128).

MOLOPOSTOLA Meyrick, 1920, *Exot. Microlepidopt.* **2** : 298.

Type-species: ***Molopostola rufitecta*** Meyrick, 1920, *ibid.* **2** : 299, by monotypy.

MOMETA Durrant, 1914, *Bull. ent. Res.* **5** : 243.

Type-species: ***Mometa zemiodes*** Durrant, 1914, *ibid.* **5** : 243, by original designation and monotypy.

****MONERISTA*** Meyrick, 1925, *Genera Insect.* **184** : 3 [key], 208.

Type-species: ***Timyra hippastis*** Meyrick, 1908, *J. Bombay nat. Hist. Soc.* **18** : 451, by original designation and monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

MONOCHROA Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 308.

Type-species: [***Tinea***] ***tenebrella*** Hübner, [1817], *Samml. eur. Schmett.*, **8**, pl. 65, fig. 434, by monotypy.

Junior subjective synonym of *Xystophora* Wocke, [1876] (Snellen, 1882, *Vlinders Nederl.*, Microlepid. : 684); *Aristotelia* Hübner, [1825] (Walsingham, 1907, *Fauna hawaii.* **1**(5) : 478). Currently considered to be a valid genus (Pierce & Metcalfe, 1935, *Genitalia Tineid Families Lepid. Br. Islands* : 2).

See also: *Catabrachmia* Rebel, 1909.

MUSURGA Meyrick, 1923, *Exot. Microlepidopt.* **3** : 3.

Type-species: ***Anorthosia sandycitis*** Meyrick, 1907, *J. Bombay nat. Hist. Soc.* **18** : 150, by original designation.

MYCONITA Meyrick, 1923, *Exot. Microlepidopt.* **3** : 27.

Type-species: ***Ceratophora plutelliformis*** Snellen, 1901, *Tijdschr. Ent.* **44** : 84, pl. 6, figs 4, 4 a, by original designation and monotypy.

****MYLOTHRA*** Meyrick, 1907, *J. Bombay nat. Hist. Soc.* **17** : 742.

Type-species: ***Mylothra creseritis*** Meyrick, 1907, *ibid.* **17** : 743, by monotypy.

Originally described in the Oecophoridae; subsequently transferred to the Symmocidae (Gozmány, 1965, *Annls hist.-nat. Mus. natn. hung.* **57** : 423).

See also: *Megasymmoca* Gozmány, 1963.

MYROPHILA Meyrick, 1923, *Exot. Microlepidopt.* **2** : 624.

Type-species: ***Trichotaphe carycina*** Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 280, by original designation.

MYSTAX Caradja, 1920, *Dt. ent. Z. Iris* **34** : 136, 138 [*Mistax*, incorrect (multiple) original spelling] (nom. praeocc.).

Type-species: *Mystax trichoma* Caradja, 1920, *ibid.* **34** : 136, by subsequent designation: Meyrick, 1925, *Entomologist* **58** : 184.

Mystax Caradja, 1920, is a junior homonym of *Mystax* Stephens, 1829 (Trichoptera). Currently considered to be a junior subjective synonym of *Thiotricha* Meyrick, 1886 (Meyrick, 1925, *Entomologist* **58** : 184).

See also: ‡*Mistax* Caradja, 1920.

MYTHOGRAPHA Meyrick, 1923, *Exot. Microlepidopt.* **2** : 626.

Type-species: ***Trichotaphe chartaria*** Meyrick, 1913, *J. Bombay nat. Hist. Soc.* **22** : 178, by original designation and monotypy.

NAERA Chambers, 1875, *Can. Ent.* **7** : 9.

Type-species: ***Naera fuscocristatella*** Chambers, 1875, *ibid.* **7** : 9, by monotypy.

Naera Chambers, 1875, is not a junior homonym. *Leuce* Chambers, 1875, was unnecessarily proposed as the objective replacement name.

NANNODIA Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 284.

Type-species: *Phalaena* (*Tinea*) *stipella* Linnaeus sensu Hübner [= *Tinea sexguttella* Thunberg, 1794, *D.D. Dissertatio ent. sistens Insecta svecica* **7** : 88, fig. 6], by subsequent designation: Walsingham, 1909, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 22.

The type-species was included by Heinemann as '*Stipella*. H.' [= Hübner] and cited by Walsingham as '*Tinea stipella* Hb.'. *Tinea stipella*: Hübner, 1796, *Samml. eur. Schmett.* **8** : 57, pl. 20, fig. 138, is a misidentification of *Phalaena* (*Tinea*) *stipella* Linnaeus, 1758, *Syst. Nat.*, (ed. 10) **1** : 539 (Oecophoridae); the valid name for the misidentified type-species is *Tinea sexguttella* Thunberg, 1794 (Benander, 1946, *Opusc. ent.* **11** : 44, 78).

Junior objective synonym of *Microsetia* Stephens, 1829. Junior subjective synonym of *Chrysopora* Clemens, 1860 (Rebel, 1901, *in* Staudinger & Rebel, *Cat. Lepid. palaearctischen Faunengebietes* **2** : 156); *Aristotelia* Hübner, [1825] (Walsingham, 1907, *Fauna hawaii.* **1**(5) : 478).

See also ‡*Nannonia* Kirby, 1875.

‡*NANNONIA* Kirby, 1875, *Zool. Rec.* (1873) **10** : 411.

Incorrect subsequent spelling of *Nannodia* Heinemann, 1870.

‡*NARTHECOCERAS* Diakonoff, 1967, *Bull. U.S. natn. Mus.* **257** : 150.

Incorrect subsequent spelling of *Narthecoceros* Meyrick, 1906.

NARTHECOCEROS Meyrick, 1906, *J. Bombay nat. Hist. Soc.* **17** : 148.

Type-species: ***Macrotona platyconta*** Meyrick, 1905, *ibid.* **16** : 597, by original designation.

See also: ‡*Narthecoceras* Diakonoff, 1967.

****NASTOCERAS*** Chrétien, 1922, *in* Oberthür, *Etud. Lépid. comp.* **19**(1) : 364.

Type-species: ***Nastoceras colluellum*** Chrétien, 1922, *ibid.* **19**(1) : 364, fig., by monotypy.

Nastoceras Chrétien, 1922, is not a junior homonym of *Nastocerus* Fairmaire, 1897 (Coleoptera), of which ‡*Nastoceras* Fletcher, 1940, is an incorrect subsequent spelling.

Originally described in the Oecophorinae [= Oecophoridae]; subsequently included in the Gelechiidae (Zerny, 1936, *Mém. Soc. Sci. nat. Phys. Maroc* **42** : 141); Gelechiidae: Symmocinae (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 343); currently placed in the Symmocidae.

See also: *Nastocerella* Fletcher, 1940.

NASTOCERELLA* Fletcher, 1940, *Entomologist's Rec. J. Var.* **52 : 18 (objective replacement name for *Nastoceras* Chrétien, 1922).

Type-species: *Nastoceras colluellum* Chrétien, 1922, *in* Oberthür, *Etud. Lépid. comp.* **19**(1) : 364, fig., by monotypy of *Nastoceras* Chrétien, 1922.

Unnecessary replacement name for *Nastoceras* Chrétien, 1922, which is not a junior homonym of *Nastocerus* Fairmaire, 1897 (Coleoptera), of which ‡*Nastoceras* Fletcher, 1940, is an incorrect subsequent spelling.

Originally proposed in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Gelechiidae: Symmocinae [= Symmocidae] (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 343).

NEAERA* Chambers, 1880, *J. Cincinn. Soc. nat. Hist.* **2 : 196, 199 [legend to fig. 40] (nom. praeocc.).

Type-species: *Laverna albella* Chambers, 1875, *Cincinn. Q. Jl Sci.* **2** : 295, by monotypy.

Neaera Chambers, 1880, is a junior homonym of *Neaera* Robineau-Desvoidy, 1830 (Diptera), and is currently considered to be a junior subjective synonym of *Elachista* Treitschke, 1833, *Schmett. Eur.* **9**(2) : 177. Braun, 1948, *Mem. Am. ent. Soc.* **13** : 43, included *L. albella* Chambers, 1875, in *Elachista* Treitschke, 1833, thereby automatically synonymizing *Neaera* Chambers, 1880, with *Elachista*. *L. albella* Chambers, 1875, is currently considered to be a junior secondary homonym of *Phigalia albella* Chambers, 1875, *Can. Ent.* **7** : 107; *Elachista adempta* Braun, 1948, *Mem. Am. ent. Soc.* **13** : 43, was proposed as the objective replacement name.

Originally proposed and currently placed in the Elachistidae. Not recorded by Neave (1939–1966, *Nomencl. zool.* **1–6**).

Neaera Chambers, 1880, was possibly not intended as a new genus, but could have been merely an incorrect subsequent spelling of *Naera* Chambers, 1875 (Gelechiidae); however, no evidence has been found to connect the two names.

NEALYDA Dietz, 1900, *Ent. News* **11** : 350.

Type-species: ***Nealyda bifidella*** Dietz, 1900, *ibid.* **11** : 351, pl. 1, figs 2–2 b, by monotypy

Originally described in the Elachistidae; subsequently transferred to the Gelechiidae (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 497).

NEDA Chambers, 1874, *Can. Ent.* **6** : 243 (nom. praeocc.).

Type-species: *Neda plutella* Chambers, 1874, *ibid.* **6** : 244, by monotypy.

Neda Chambers, 1874, is a junior homonym of *Neda* Mulsant, 1850 (Coleoptera); *Autoneda* Busck, [1903], was proposed as the objective replacement name. Junior subjective synonym of *Megacraspedus* Zeller, 1839 (Meyrick, 1925, *Genera Insect.* **184** : 33).

NEMATOCHARES Meyrick, 1931, *Exot. Microlepidopt.* **4** : 82.

Type-species: ***Nematochares citraulax*** Meyrick, 1931, *ibid.* **4** : 83, by monotypy.

NEOCHRISTA Meyrick, 1923, *Exot. Microlepidopt.* **2** : 625.

Type-species: ***Noeza auritogata*** Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 85, pl. 3, fig. 6, by original designation and monotypy.

Junior subjective synonym of *Noeza* Walker, 1866 (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 19). Currently considered to be a junior subjective synonym of *Plocamosaris* Meyrick, 1912, **syn.n.,** which is here used as the subjective replacement name for *Noeza* Walker, 1866, nom. praeocc.

****NEOCORODES*** Meyrick, 1923, *Exot. Microlepidopt.* **3** : 36.

Type-species: ***Neocorodes amnesta*** Meyrick, 1923, *ibid.* **3** : 36, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

NEODACTYLOTA Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 504.

Type-species: ***Dactylota snellenella*** Walsingham, 1888, *Insect. Life* **1** : 84, by monotypy.

Correct date of publication (1903, January 13th) taken from Clarke, 1950, *Proc. ent. Soc. Wash.* **52** : 308.

Of the two originally included nominal species, only *snellenella* was nomenclaturally available at that time and must therefore be the type-species by monotypy.

See also: *Eudactylota* Walsingham, 1911.

NEOFACULTA Gozmány, 1955, *Annls hist.-nat. Mus. natn. hung.*, S.N. **6** : 308 and 309 [keys], 312.

Type-species: ***Gelechia infernella*** Herrich-Schäffer, 1854, *Syst. Bearb. Schmett. Eur.* **5** : 162 [key], 177; *ibid.* **5**, pl. 77, fig. 584 [*infernalis*, incorrect (multiple) original spelling], by original designation and monotypy.

The type-species was cited by Gozmány as '*Gelechia infernalis* Stgr.' There is clear evidence in the original publication that *infernella* is the correct original spelling. It was used four times, on pp. 162 [key] and 177, and in the indexes (1855, *ibid.* [index to vol. **5**]: 23; 1856, *ibid.* [index universalis] : 31), while *infernalis* is used only once in the legend to pl. 77, fig. 584.

NEOFRISERIA Sattler, 1960, *Dt. ent. Z.*, N.F. **7** : 16 and 17 [keys], 48.

Type-species: ***Lita peliella*** Treitschke, 1835, *Schmett. Eur.* **10**(3) : 198, by original designation.

NEOLECHIA Diakonoff, 1948, *Treubia* **19** : 189.

Type-species: ***Neolechia gamma*** Diakonoff, 1948, *ibid.* **19** : 189, text-fig. 2, pl. 5, fig. 4, by original designation and monotypy.

NEOPACHNISTIS Janse, 1954, *Moths S. Afr.* **5** : 353.

Type-species: ***Pachnistis microphanta*** Meyrick, 1921, *Ann. Transv. Mus.* **8** : 89, by original designation.

NEOPATETRIS Janse, 1960, *Moths S. Afr.* **6** : 182.

Type-species: ***Neopatetris tenuis*** Janse, 1960, *ibid.* **6** : 183, figs, by original designation and monotypy.

NEOSCHEMA Povolný, 1967, *Acta ent. Mus. natn. Pragae* **37** : 81.

Type-species: ***Gnorimoschema* (*Neoschema*) *klotsi*** Povolný, 1967, *ibid.* **37** : 81, fig. 57, by monotypy.

Originally proposed as a subgenus of *Gnorimoschema* Busck, 1900.

******NEOSPASTUS*** Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 342.

Type-species: ***Symmoca delicatella*** Walsingham, 1901, *Entomologist's mon. Mag.* **37** : 178, by original designation and monotypy.

The type-species was cited by Gozmány as'*delicatellus* Wlsghm.'.

Originally described in the Gelechiidae: Symmocinae; currently placed in the Symmocidae.

NEOTELPHUSA Janse, 1958, *Moths S. Afr.* **6** : 77.

Type-species: ***Telphusa castrigera*** Meyrick, 1913, *Ann. Transv. Mus.* **3** : 287, by original designation.

NESOLECHIA Meyrick, 1921, *Exot. Microlepidopt.* **2** : 425.

Type-species: ***Nesolechia horogramma*** Meyrick, 1921, *ibid.* **2** : 425, by monotypy.

Currently considered to be a junior subjective synonym of *Sitotroga* Heinemann, 1870 (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 19).

******NESTORELLUS*** Gerasimov, 1930, *Ezheg. zool. Muz.* **31** : 35.

Type-species: ***Nestorellus meyricki*** Gerasimov, 1930, *ibid.* **31** : 35, pl. 11, figs 3–8, by original designation and monotypy.

Originally described in the Gelechiidae; subsequently included in the Gelechiidae: Symmocinae (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 344); currently placed in the Symmocidae.

NEVADIA Caradja, 1920, *Dt. ent. Z. Iris* **34** : 117 (nom. praeocc.).

Type-species: *Nevadia ribbeella* Caradja, 1920, *ibid.* **34** : 118, by monotypy.

Nevadia Caradja, 1920, is a junior homonym of *Nevadia* Walcott, 1910 (Trilobita); *Vadenia* Caradja, 1933, was proposed as the objective replacement name.

NOEZA Walker, 1866, *List Specimens lepid. Insects Colln Br. Mus.* **35** : 1839 (nom. praeocc.).

Type-species: *Noeza telegraphella* Walker, 1866, *ibid.* **35** : 1839, by monotypy.

Noeza Walker, 1866, is a junior homonym of *Noeza* Meigen, 1800 (Diptera). Currently considered to be a senior subjective synonym of *Plocamosaris* Meyrick, 1912 (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 18, 19), which is here used as the subjective replacement name.

See also: *Neochrista* Meyrick, 1923.

NOMIA Clemens, 1860, *Proc. Acad. nat. Sci. Philad.* **1860** : 167 (nom. praeocc.).

Type-species: *Nomia lingulacella* Clemens, 1860, *ibid.* **1860** : 167, by monotypy.

Nomia Clemens, 1860, is a junior homonym of *Nomia* Latreille, 1804 (Hymenoptera); *Chrysopora* Clemens, 1860, was proposed as the objective replacement name. Junior subjective synonym of *Aristotelia* Hübner, [1825] (Walsingham, 1907, *Fauna hawaii.* **1**(5) : 478).

****NOSPHISTICA*** Meyrick, 1911, *J. Bombay nat. Hist. Soc.* **20** : 733.

Type-species: ***Nosphistica erratica*** Meyrick, 1911, *ibid.* **20** : 733, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

NOTHRIS Hübner, [1825], *Verz. bekannter Schmett.* : 411.

Type-species: ***Tinea verbascella*** [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend* : 136, by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 97.

Correct date of publication ([1825]) taken from Opinion 150, *Opin. Decl. int. Commn zool. Nom.* **2** : 166 (1943).

Tinea verbascella has been erroneously attributed to Hübner, 1796, *Samml. eur. Schmett.* **8** : 40, pl. 14, fig. 98, by several authors.

****NUKUSA*** Gozmány, 1963, *Acta zool. hung.* **9** : 69.

Type-species: ***Lampros (Oecophora) praeditella*** Rebel, 1891, *Verh. zool.-bot. Ges. Wien* **41** : 634, by original designation and monotypy.

Originally described and currently placed in the Symmocidae.

NUMATA Busck, 1906, *Proc. U.S. natn. Mus.* **30** : 724.

Type-species: ***Numata bipunctella*** Busck, 1906, *ibid.* **30** : 724, fig. 2, by original designation and monotypy.

OCHMASTIS Meyrick, 1908, *Rec. Indian Mus.* **2** : 396.

Type-species: ***Ochmastis chionacma*** Meyrick, 1908, *ibid.* **2** : 396, by monotypy.

OCHRODIA Povolný, 1966, *Acta ent. bohemoslovaca* **63** : 142.

Type-species: ***Gelechia subdiminutella*** Stainton, 1867, *Tineina of Syria and Asia Minor* : 45, by original designation and monotypy.

Originally proposed as a subgenus of *Ephysteris* Meyrick, 1908.

OCTONODULA Janse, 1951, *Moths S. Afr.* **5** : 263.

Type-species: ***Anacampsis inumbrata*** Meyrick, 1914, *Ann. Transv. Mus.* **4** : 193, by original designation.

****OECIA*** Walsingham, 1897, *Proc. zool. Soc. Lond.* **1897** : 111.

Type-species: ***Oecia maculata*** Walsingham, 1897, *ibid.* **1897** : 111, by original designation and monotypy.

Currently considered to be a junior subjective synonym of *Macroceras* Staudinger, 1876, nom. praeocc. (Meyrick, 1915, *Trans. ent. Soc. Lond.* **1915** : 201), for which it is used as the subjective replacement name.

O. maculata Walsingham, 1897, is currently considered to be a junior subjective synonym of *Macroceras oecophila* Staudinger, 1876, the type-species of *Macroceras* Staudinger, 1876, nom. praeocc. (Meyrick, 1915, *Trans. ent. Soc. Lond.* **1915** : 201).

Originally described in the Elachistidae: Scythrinae [= Scythrididae]; subsequently included in the Gelechiadae [= Gelechiidae] (Meyrick, 1915, *Trans. ent. Soc. Lond.* **1915** : 201); Gelechiidae: Lecithocerinae (Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 153); currently placed in the Lecithoceridae.

OECOCECIS Guenée, 1870, *Annls Soc. ent. Fr.* (4)**10** : 13.
Type-species: ***Oecocecis guyonella*** Guenée, 1870, *ibid.* (4)**10** : 14, pl. 7, figs 1–11, by monotypy.

**OECOGENIA* [Anonymous], 1858, *Accentuated List Br. Lepid.* : 91.
Type-species: *Recurvaria quadripuncta* Haworth, 1828, *Lepid. Br.* : 557, by monotypy of *Oegoconia* Stainton, 1854.
Unjustified emendation of *Oegoconia* Stainton, 1854 (Symmocidae). Not recorded as an emendation by Neave (1939–1966, *Nomencl. zool.* **1–6**).

*‡*OECOGONIA* Hartmann, 1880, *Mitt. münch. ent. Ver.* **4** : 33.
Incorrect subsequent spelling of *Oegoconia* Stainton, 1854 (Symmocidae).

**OECOGONIA* Reutti, 1898, *Übersicht Lepid.-Fauna Grossherzogtums Baden*, (2. Ausgabe) : 240.
Type-species: *Recurvaria quadripuncta* Haworth, 1828, *Lepid. Br.* : 557, by monotypy of *Oegoconia* Stainton, 1854.
Unjustified emendation of *Oegoconia* Stainton, 1854 (Symmocidae). Not recorded as an emendation by Neave (1939–1966, *Nomencl. zool.* **1–6**).

****OEGOCONIA*** Stainton, 1854, *Insecta Br.*, Lepid.: Tineina : 162.
Type-species: ***Recurvaria quadripuncta*** Haworth, 1828, *Lepid. Br.* : 557, by monotypy.
Originally described in the Gelechi[i]dae; subsequently included in the Gelechiidae: Lecithocerinae (Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 153); currently placed in the Symmocidae (Popescu-Gorj & Drăghia, 1967, *Trav. Mus. Hist. nat. 'Gr. Antipa'* **7** : 186).
See also: *Apatema* Walsingham, 1900; *Clerogenes* Meyrick, 1921; *Oecogenia* [Anonymus], 1858; ‡*Oecogonia* Hartmann, 1880; *Oecogonia* Reutti, 1898.

‡*OEGOCONIDES* Neave, 1940, *Nomencl. zool.* **3** : 393.
Incorrect subsequent spelling of *Oegoconiodes* Matsumura, 1931.

*†***OEGOCONIITES*** Kusnezov, 1941, *Revision Amber Lepid.* : 51.
Type-species: †***Oegoconiites borisjaki*** Kusnezov, 1941, *ibid.* : 53, pl. 22, fig. 37, pl. 23, fig. 38, by original designation and monotypy.
A fossil genus and species. Originally described in the Gelechiidae; here transferred to the Symmocidae.

OEGOCONIODES Matsumura, 1931, 6000 *Ill. Insects Japan-Empire* : 1092.
Type-species: ***Oegoconiodes obliquata*** Matsumura, 1931, *ibid.* : 1092, fig., by monotypy.
Currently considered to be a junior subjective synonym of *Polyhymno* Chambers, 1874 (Inoue, 1954, *Check List Lepid. Japan* **1** : 68).
Originally described in the Oecophoridae; subsequently transferred to the Gelechiidae (Gaede, 1937, *Lepid. Cat.* **79** : 476).
See also: ‡*Oegoconides* Neave, 1940.

OESEIS Chambers, 1875, *Cincinn. Q. Jl Sci.* **2** : 255.
Type-species: ***Oeseis bianulella*** Chambers, 1875, *ibid.* **2** : 255, by monotypy.
Junior subjective synonym of *Nothris* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 97); currently considered to be a junior subjective synonym of *Gelechia* Hübner, [1825] (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 511).

OESTOMORPHA Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 107.
Type-species: ***Oestomorpha alloea*** Walsingham, 1911, *ibid.* **4** : 108, pl. 3, fig. 29, by original designation and monotypy.

****OLBOTHREPTA*** Meyrick, 1925, *Genera Insect.* **184** : 3 [key], 209.
Type-species: ***Timyra hydrosema*** Meyrick, 1916, *Exot. Microlepidopt.* **1** : 572, by original designation.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

ONCEROZANCLA Turner, 1933, *Trans. R. Soc. S. Aust.* **57** : 175.
Type-species: ***Oncerozancla euopa*** Turner, 1933, *ibid.* **57** : 175, by monotypy.

ONEBALA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 792.
Type-species: ***Onebala blandiella*** Walker, 1864, *ibid.* **29** : 792, by monotypy.
See also: *Dectobathra* Meyrick, 1904; *Helcystogramma* Zeller, 1877.

OPACOPSIS Povolný, 1964, *Čas. Čsl. Spol. ent.* **61** : 344.
Type-species: ***Gelechia inustella*** Herrich-Schäffer, 1854, *Syst. Bearb. Schmett. Eur.* **5** : 171; 1853, *ibid.* **5**, pl. 67, fig. 498 [non-binominal], by original designation.
Originally proposed as a subgenus of *Ephysteris* Meyrick, 1908.

ORGANITIS Meyrick, 1906, *J. Bombay nat. Hist. Soc.* **17** : 151.
Type-species: ***Organitis characopa*** Meyrick, 1906, *ibid.* **17** : 151, by monotypy.

ORNATIVALVA Gozmány, 1955, *Annls hist.-nat. Mus. natn. hung.*, S.N. **6** : 308 and 309 [keys], 310.
Type-species: ***Gelechia plutelliformis*** Staudinger, 1859, *Stettin. ent. Ztg* **20** : 239, by original designation and monotypy.
See also: *Pelostola* Janse, 1960.

****ORPECOVALVA*** Gozmány, 1964, *Acta zool. hung.* **10** : 113.
Type-species: ***Symmoca obliterata*** Walsingham, 1905, *Entomologist's mon. Mag.* **41** : 38, by original designation and monotypy.
Originally described and currently placed in the Symmocidae.

ORPHANOCLERA Meyrick, 1925, *Treubia* **6** : 430.
Type-species: ***Orphanoclera tyriocoma*** Meyrick, 1925, *ibid.* **6** : 430, by monotypy.
Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 155, erroneously cited 1927 as the date of publication.

ORSODYTIS Meyrick, 1926, *Exot. Microlepidopt.* **3** : 286.
Type-species: ***Brachycrossata marginata*** Walsingham, 1891, *Trans. ent. Soc. Lond.* **1891** : 99, pl. 4, fig. 35, by original designation and monotypy.

ORSOTRICHA Meyrick, 1914, *Exot. Microlepidopt.* **1** : 269.
Type-species: ***Topeutis venosa*** Butler, 1883, *Trans. ent. Soc. Lond.* **1883** : 77, by original designation and monotypy.
Originally described in the Oecophoridae; subsequently transferred to the Gelechiidae (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 23).

ORTHOPTILA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 258 [key], 392.
Type-species: ***Oecophora abruptella*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **30** : 1032, by monotypy.

****ORYGOCERA*** Walsingham, 1897, *Trans. ent. Soc. Lond.* **1897** : 41.
Type-species: ***Orygocera carnicolor*** Walsingham, 1897, *ibid.* **1897** : 42, pl. 2, fig. 5, by original designation and monotypy.
Originally described and currently placed in the Oecophoridae. Clarke, 1969, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **7** : 275, erroneously used the name in the Gelechiidae, when he transferred some former *Orygocera* species from the Oecophoridae to the Gelechiidae.

OXYBELIA Hübner, [1825], *Verz. bekannter Schmett.* : 407.
Type-species: ***Tinea capucinella*** Hübner, 1796, *Samml. eur. Schmett.* **8** : 46, pl. 23, fig. 159, by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 174.
Correct date of publication ([1825]) taken from Opinion 150, *Opin. Decl. int. Commn zool. Nom.* **2** : 166 (1943).
The type-species was cited by Meyrick, as '*D. ustulella*, Fabricius'. This was not an originally included nominal species of *Oxybelia* Hübner, [1825], however, Meyrick placed it on p. 177 as the senior synonym of *T. capucinella* Hübner, 1796 (*Int. Code zool. Nom.*, Article 69 (a)(iv)).

Currently considered to be a junior subjective synonym of *Dichomeris* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 174). *T. capucinella* Hübner, 1796, is currently considered to be a junior subjective synonym of *Tinea ustalella* Fabricius, 1794, *Ent. syst.* **3**(2) : 307 (Treitschke, 1833, *Schmett. Eur.* **9**(2) : 11 [as ‡*ustulella*, incorrect subsequent spelling of *ustalella*]), the type-species of *Rhinosia* Treitschke, 1833.

OXYCRYPTIS Meyrick, 1912, *Trans. ent. Soc. Lond.* **1911** : 692.
Type-species: ***Oxycryptis attonita*** Meyrick, 1912, *ibid.* **1911** : 692, by monotypy.

****OXYGNOSTIS*** Meyrick, 1925, *Genera Insect.* **184** : 12 [key], 206.
Type-species: ***Tipha diacma*** Meyrick, 1906, *J. Bombay nat. Hist. Soc.* **17** : 142, by original designation and monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

OXYLECHIA Meyrick, 1917, *Trans. ent. Soc. Lond.* **1917** : 39.
Type-species: ***Oxylechia confirmata*** Meyrick, 1917, *ibid.* **1917** : 39, by monotypy.

OXYPTERYX Rebel, 1911, *Verh. zool.-bot. Ges. Wien* **61** : (151).
Type-species: ***Oxypteryx jordanella*** Rebel, 1911, *ibid.* **61** : (151), fig. 2, by monotypy.
Junior subjective synonym of *Acompsia* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 142); currently considered to be a valid genus (Amsel, 1935, *Veröff. dt. Kolon. u. Übersee-Mus. Bremen* **1** : 265).

OXYSACTIS Meyrick, 1923, *Exot. Microlepidopt.* **3** : 35.
Type-species: ***Brachyacma sciritis*** Meyrick, 1918, *ibid.* **2** : 149, by original designation and monotypy.
Currently considered to be a junior subjective synonym of *Cymotricha* Meyrick, 1923 (Meyrick, 1925, *Genera Insect.* **184** : 188).

PACHNISTIS Meyrick, 1907, *J. Bombay nat. Hist. Soc.* **17** : 737.
Type-species: ***Pachnistis cephalochra*** Meyrick, 1907, *ibid.* **17** : 737, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Timyridae [= Lecithoceridae] (Clarke, 1965, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **5** : 195); currently placed in the Gelechiidae (Clarke, 1969, *ibid.* **7** : 280).

PACHYGENEIA Meyrick, 1923, *Exot. Microlepidopt.* **3** : 11.
Type-species: ***Pachygeneia clitellaria*** Meyrick, 1923, *ibid.* **3** : 11, by monotypy.

PACHYSARIS Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 276.
Type-species: ***Pachysaris rurigena*** Meyrick, 1914, *ibid.* **1914** : 277, by original designation.

PALINTROPA Meyrick, 1913, *J. Bombay nat. Hist. Soc.* **22** : 160.
Type-species: ***Palintropa hippica*** Meyrick, 1913, *ibid.* **22** : 160, by monotypy.

PALTODORA Meyrick, 1894, *Entomologist's mon. Mag.* **30** : 230.
Type-species: ***Cleodora cytisella*** Curtis, 1837, *Br. Ent.*, **14**, no. 671, by original designation.
Meyrick stated: '. . . for *Cleodora*, Curt. (pre-occupied in Mollusca), to substitute *Paltodora* (type *cytisella* Curt.)'. This can only be interpreted as a genus proposed for *Cleodora* Stephens sensu Curtis, 1837, *Br. Ent.* **16**, no. 671, with the type-species *cytisella*. It cannot be taken as a replacement name for *Cleodora* Stephens, 1834, the type-species of which is *Tinea silacella* Hübner sensu Stephens, 1834 [= *Phalaena Tinea lappella* Linnaeus, 1758]. This interpretation follows Meyrick, 1925, *Genera Insect.* **184** : 29, 36, who placed *Cleodora* Stephens (citing '*M. lappella*, Linn.' as the type-species) as a synonym of *Metzneria* Zeller, 1839, while accepting *Paltodora* Meyrick as a valid genus, without *Cleodora* in synonymy.

PALTOLOMA Ghesquière, 1940, *Rev. Zool. Bot. afr.* **34** : 104.
Type-species: ***Paltoloma paleata*** Ghesquière, 1940, *ibid.* **34** : 105, by monotypy.

PANCOENIA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 258 [key], 389.
Type-species: ***Pancoenia periphora*** Meyrick, 1904, *ibid.* **29** : 389, by original designation.

PANICOTRICHA Meyrick, 1913, *Ann. Transv. Mus.* **3** : 296.

Type-species: ***Panicotricha prographa*** Meyrick, 1913, *ibid.* **3** : 296, by monotypy.

PANPLATYCEROS Diakonoff, 1951, *Ark. Zool.* (2)**3** : 76.

Type-species: ***Panplatyceros serpentina*** Diakonoff, 1951, *ibid.* (2)**3** : 76, figs 17, 18, by original designation and monotypy.

Published as a separate in 1951.

****PANTACORDIS*** Gozmány, 1954, *Annls hist.-nat. Mus. natn. hung.*, S.N. **5** : 282.

Type-species: ***Pantacordis pales*** Gozmány, 1954, *ibid.* **5** : 283, fig. 23, by original designation.

Junior subjective synonym of *Eremica* Walsingham, 1904 (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 335); currently considered to be a valid genus (Gozmany, 1964, *Acta zool. hung.* **10** : 106).

Originally described in the Gelechiidae; subsequently included in the Gelechiidae: Symmocinae (Gozmány, 1957, *Annls hist. nat. Mus. natn. hung.*, S.N. **8** : 335); currently placed in the Symmocidae.

PAPPOPHORUS Walsingham, 1897, *Trans. ent. Soc. Lond.* **1897** : 39.

Type-species: ***Pappophorus eurynotus*** Walsingham, 1897, *ibid.* **1897** : 40, pl. 2, fig. 4, by original designation and monotypy.

PARABOLA Janse, 1950, *Moths S. Afr.* **5** : 127.

Type-species: ***Idiophantis butyraula*** Meyrick, 1913, *Ann. Transv. Mus.* **3** : 285, by original designation and monotypy.

The type-species was cited by Janse as '*Idiophantis buttyraula* Meyr.'.

PARABRACHMIA Janse, 1960, *Moths S. Afr.* **6** : 191.

Type-species: ***Parabrachmia trisignella*** Janse, 1960, *ibid.* **6** : 192, figs, by original designation.

PARACHRONISTIS Meyrick, 1925, *Genera Insect.* **184** : 14 [key], 52.

Type-species: ***Gelechia*** **(*Brachmia*)** ***albiceps*** Zeller, 1839, *Isis, Leipzig* **1839** : 202, by original designation and monotypy.

See also: *Poecilia* Heinemann, 1870.

PARADORIS* Meyrick, 1907, *J. Bombay nat. Hist. Soc.* **17 : 740 (nom. praeocc.) (objective replacement name for *Euteles* Heinemann, 1870, nom. praeocc.).

Type-species: *Tinea kollarella* Costa, [1836], *Fauna Regno Napoli*, Lepid. : [219], by monotypy of *Euteles* Heinemann, 1870.

For date and pagination of *T. kollarella* Costa, [1836], see Direction 59, *Opin. Decl. int. Commn zool. Nom.* **15**(16) : [iii]–xviii (1957).

Paradoris Meyrick, 1907, is a junior homonym of *Paradoris* Bergh, 1844 (Mollusca). The objective replacement name *Paradoris* Meyrick, 1907, nom. praeocc., automatically follows *Euteles* Heinemann, 1870, nom. praeocc., which is currently replaced by its junior subjective synonym *Odites* Walsingham, 1891 (Gozmány, 1958, *Fauna Hung.* **40** : 35).

Incorrect type-species: *Paradoris anaphracta* Meyrick, 1907, *J. Bombay nat. Hist. Soc.* **17** : 740, designated by Meyrick, 1911, *ibid.* **20** : 735. *Paradoris* Meyrick, 1907, was proposed as the objective replacement name for *Euteles* Heinemann, 1870, and therefore automatically takes its type-species *Tinea kollarella* Costa, [1836]. The subsequent designation of *P. anaphracta* Meyrick, 1907, as the type-species thus is invalid. Based on this incorrect type-species *Paradoris* Meyrick, 1907, has been placed as a junior subjective synonym of *Symmoca* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 200).

Originally proposed and currently placed in the Xyloryctidae; erroneously placed in the Gelechiadae [= Gelechiidae] by Meyrick, 1925, *ibid.* **184** : 200.

PARALECHIA Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 502.

Type-species: ***Gelechia pinifoliella*** Chambers, 1880, *J. Cincinn. Soc. nat. Hist.* **2** : 181, by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 59.

Correct date of publication (1903, January 13th) taken from Clarke, 1950, *Proc. ent. Soc. Wash.* **52** : 308.

Currently considered to be a junior subjective synonym of *Exoteleia* Wallengren, 1881 (Meyrick, 1925, *Genera Insect.* **184** : 59).

PARALIDA Clarke, 1958, *Ent. News* **69** : 1.

Type-species: ***Paralida triannulata*** Clarke, 1958, *ibid.* **69** : 2, figs 1–4, by original designation and monotypy.

PARALLACTIS Meyrick, 1925, *Genera Insect.* **184** : 8 [key], 246.

Type-species: ***Pachnistis plaesiodes*** Meyrick, 1920, *Voyage Ch. Alluaud R. Jeannel Afr. orient.*, **2**, Microlepid. : 78, by original designation.

PARAMETANARSIA Gerasimov, 1930, *Ezheg. zool. Muz.* **31** : 33.

Type-species: ***Metanarsia junctivittella*** Christoph, 1885, *in* Romanoff, *Mém. Lépid.* **2** : 161, pl. 8, fig. 11, by original designation and monotypy.

Originally proposed as a subgenus of *Metanarsia* Staudinger, 1871. The type-species was cited by Gerasimov as '*junctivitella*', which is an incorrect subsequent spelling of *junctivittella* Christoph, 1885.

PARANARSIA Ragonot, 1895, *Bull. Soc. ent. Fr.* **1895** : 195.

Type-species: ***Paranarsia joannisiella*** Ragonot, 1895, *ibid.* **1895** : 196, by monotypy.

PARANOEA Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 78.

Type-species: ***Paranoea latescens*** Walsingham, 1911, *ibid.* **4** : 79, fig. 18, pl. 2, fig. 28, by original designation and monotypy.

PARAPODIA Joannis, 1912, *Bull. Soc. ent. Fr.* **1912** : 305.

Type-species: ***Parapodia tamaricicola*** Joannis, 1912, *ibid.* **1912** : 305, by monotypy.

Junior subjective synonym of *Aristotelia* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 41); subgenus of *Aristotelia* Hübner, [1825] (Gaede, 1937, *Lepid. Cat.* **79** : 44); currently considered to be a valid genus (Sattler, 1962, *Beitr. naturk. Forsch. SüdwDtl.* **21** : 51). *P. tamaricicola* Joannis, 1912, is currently considered to be a junior subjective synonym of *Gelechia sinaica* Frauenfeld, 1859, *Verh. zool.-bot. Ges. Wien* **9** : 323, figs (Joannis, 1912, *Bull. Soc. ent. Fr.* **1912** : 380).

See also: *Cecidonostola* Amsel, 1958.

PARAPSECTRIS Meyrick, 1911, *Ann. Transv. Mus.* **2** : 230.

Type-species: ***Parapsectris tholaea*** Meyrick, 1911, *ibid.* **2** : 231, by monotypy.

PARASELOTIS Janse, 1960, *Moths S. Afr.* **6** : 200.

Type-species: ***Paraselotis pelochroa*** Janse, 1960, *ibid.* **6** : 202, figs, by original designation and monotypy.

PARASIA Duponchel, [1846], *Cat. méthod. Lépid. Eur.* : 350.

Type-species: ***Gelechia (Metzneria) neuropterella*** Zeller, 1839, *Isis, Leipzig* **1839** : 202, by monotypy.

Currently considered to be a junior subjective synonym of *Metzneria* Zeller, 1839 (Walsingham & Durrant, 1899, *Entomologist's mon. Mag.* **35** : 199).

PARASPISTES Meyrick, 1905, *J. Bombay nat. Hist. Soc.* **16** : 600.

Type-species: ***Paraspistes ioloncha*** Meyrick, 1905, *ibid.* **16** : 600, by monotypy.

Junior subjective synonym of *Lathontogenus* Walsingham, 1897 (Walsingham, 1915, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 408); currently considered to be a junior subjective synonym of *Brachyacma* Meyrick, 1886 (Meyrick, 1925, *Genera Insect.* **184** : 168). *P. ioloncha* Meyrick, 1905, is currently considered to be a junior subjective synonym of *Gelechia palpigera* Walsingham, 1891, *Trans. ent. Soc. Lond.* **1891** : 94, pl. 4, fig. 31 (Busck, 1914, *Proc. U.S. natn. Mus.* **47** : 10).

See also: ‡*Paraspistis* Busck, 1914.

‡*PARASPISTIS* Busck, 1914, *Proc. U.S. natn. Mus.* **47** : 10.

Incorrect subsequent spelling of *Paraspistes* Meyrick, 1905.

PARASTEGA Meyrick, 1912, *Trans. ent. Soc. Lond.* **1911** : 693.

Type-species: ***Psoricoptera niveisignella*** Zeller, 1877, *Horae Soc. ent. ross.* **13** : 333, pl. 4, fig. 106, by monotypy.

****PARASYMMOCA*** Rebel, 1903, *Verh. zool.-bot. Ges. Wien* **53** : 414.

Type-species: ***Hypatima latiusculella*** Stainton, 1867, *Tineina of Syria and Asia Minor* : 55, by monotypy.

Junior subjective synonym of *Symmoca* Hübner, [1825] (Rebel, 1905, *Annln naturh. Mus. Wien* **20** : 214, figs); currently considered to be a subgenus of *Symmoca* Hübner, [1825] (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 330 [as *Conquassata* Gózmany, 1957]).

Erroneously considered to be a nomen nudum by Gozmány, 1957, *ibid.* **8** : 330, who at the same time unnecessarily proposed the name *Conquassata* for the subgenus which included *H. latiusculella* Stainton, 1867, the type-species of *Parasymmoca* Rebel, 1903. *H. latiusculella* Stainton, 1867, is currently considered to be a senior subjective synonym of *Symmoletria sulamit* Gozmány, 1963, the type-species of *Symmoletria* Gozmány, 1963 (Kasy, 1966, *in* Gozmány, *Z. wien. ent. Ges.* (51. Jg) **77** : 70).

Originally described in the Gelechiidae: Oecophorinae [= Oecophoridae]; subsequently included in the Gelechiidae (Rebel, 1905, *Annln naturhist. Mus. Wien* **20** : 214, figs); Gelechiidae: Symmocinae (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 326, 330); currently placed in the Symmocidae.

See also: *Conquassata* Gozmány, 1957; *Symmoletria* Gozmány, 1963.

PARATELPHUSA Janse, 1958, *Moths S. Afr.* **6** : 61.

Type-species: ***Paratelphusa griseoptera*** Janse, 1958, *ibid.* **6** : 62, figs, by original designation.

Paratelphusa Janse, 1958, is not a junior homonym of ‡*Paratelphusa* Zehntner, 1894, which is an incorrect subsequent spelling of *Parathelphusa* Milne-Edwards, 1853 (Crustacea), and is therefore invalid and unavailable for purposes of homonymy.

PARATHECTIS Janse, 1958, *Moths S. Afr.* **6** : 115.

Type-species: ***Epithectis farinata*** Meyrick, 1913, *Ann. Transv Mus* **3** : 285, by original designation.

PARELECTRA Meyrick, 1925, *Genera Insect.* **184** : 8 [key], 129 (nom. praeocc.).

Type-species: *Strobisia helicopis* Meyrick, 1922, *Trans. ent. Soc. Lond.* **1922** : 101, by original designation.

Parelectra Meyrick, 1925, is a junior homonym of *Parelectra* Dognin, 1914 (Lepidoptera: Noctuidae); *Parelectroides* Clarke, 1952, was proposed as the objective replacement name.

PARELECTROIDES Clarke, 1952, *Proc. ent. Soc. Wash.* **54** : 99 (objective replacement name for *Parelectra* Meyrick, 1925, nom. praeocc.).

Type-species: ***Strobisia helicopis*** Meyrick, 1922, *Trans. ent. Soc. Lond.* **1922** : 101, by original designation for *Parelectra* Meyrick, 1925.

****PARELLIPTIS*** Meyrick, 1910, *J. Bombay nat. Hist. Soc.* **20** : 439.

Type-species: ***Parelliptis scytalias*** Meyrick, 1910, *ibid.* **20** : 439, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

PARISTHMIA Meyrick, 1909, *Ann. Transv. Mus.* **2** : 13.

Type-species: ***Paristhmia barathrodes*** Meyrick, 1909, *ibid.* **2** : 13, by monotypy.

****PARTHENOPTERA*** Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 334.

Type-species: ***Symmoca virginella*** Rebel, 1902, *Dt. ent. Z. Iris* **15** : 112, pl. 4, fig. 6, by original designation and monotypy.

Currently considered to be a junior subjective synonym of *Aprominta* Gozmány, 1957 (Gozmány, 1963, *Acta zool. hung.* **9** : 102).

Originally described in the Gelechiidae: Symmocinae; currently placed in the Symmocidae.

****PATOUISSA*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 820.
Type-species: ***Patouissa dissonella*** Walker, 1864, *ibid.* **29** : 821, by monotypy.
Originally described in the Gelechi[i]dae; currently considered to be a junior subjective synonym of *Lecithocera* Herrich-Schäffer, 1853 (Meyrick, 1925, *Genera Insect.* **184** : 237), which automatically places *Patouissa* Walker, 1864, in the Lecithoceridae.

PAURONEURA Turner, 1919, *Proc. R. Soc. Qd* **31** : 120.
Type-species: ***Pauroneura brachysticha*** Turner, 1919, *ibid.* **31** : 121, by monotypy.
Correct date of publication (1919, December 30th) taken from original wrapper.

PAVOLECHIA Busck, 1914, *Proc. U.S. natn. Mus.* **47** : 20.
Type-species: ***Pavolechia argentea*** Busck, 1914, *ibid.* **47** : 21, by original designation and monotypy
Originally described in the Gelechiidae; subsequently included in the Cryptophasidae [= Xyloryctidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 166); currently placed in the Gelechiidae (Busck, 1940, *Bull. Sth. Calif. Acad. Sci.* **39** : 90).
See also: *Desmaucha* Meyrick, 1918.

****PECTENEREMUS*** Gozmány, 1963, *Acta zool. hung.* **9** : 109.
Type-species: ***Eremica albella*** Amsel, 1959, *Stuttg. Beitr. Naturk.* **28** : 34, pl. 2, fig. 5, by original designation.
Originally described and currently placed in the Symmocidae.

PECTINOPHORA Busck, 1917, *J. agric. Res.* **9** : 346.
Type-species: ***Depressaria gossypiella*** Saunders, 1844, *Trans. ent. Soc. Lond.* **3** : 285 by original designation.
Junior subjective synonym of *Platyedra* Meyrick, 1895 (Meyrick, 1925, *Genera Insect.* **184** : 84); currently considered to be a valid genus. (Common, 1958, *Aust. J. Zool.* **6** : 272).

****PEDIOXESTIS*** Meyrick, 1932, *Exot. Microlepidopt.* **4** : 198.
Type-species: ***Pedioxestis isomorpha*** Meyrick, 1932, *ibid.* **4** : 199, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Oecophoridae (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).

PELOCNISTIS Meyrick, 1932, *Exot. Microlepidopt.* **4** : 193.
Type-species: ***Pelocnistis xylozona*** Meyrick, 1932, *ibid.* **4** : 193, by monotypy.

PELOSTOLA Janse, 1960, *Moths S. Afr.* **6** : 188.
Type-species: ***Pelostola kalahariensis*** Janse, 1960, *ibid.* **6** : 189, figs, by original designation and monotypy.
Currently considered to be a junior subjective synonym of *Ornativalva* Gozmány, 1955 (Sattler, 1967, *Beitr. naturk. Forsch. SüdwDtl.* **26**(3) : 34).

PERIORISTICA Walsingham, 1910, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 31
Type-species: ***Perioristica chalcopera*** Walsingham, 1910, *ibid* **4** : 32, fig. 10, pl. 1, fig. 28, by original designation and monotypy.

****PERIPHORECTIS*** Meyrick, 1925, *Genera Insect.* **184** : 11 [key], 235.
Type-species: ***Lecithocera ichorodes*** Meyrick, 1910, *J. Bombay nat. Hist. Soc.* **20** : 445, by original designation and monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

PESSOGRAPTIS Meyrick, 1923, *Exot. Microlepidopt.* **3** : 29.
Type-species: ***Pessograptis thalamias*** Meyrick, 1923, *ibid.* **3** : 30, by original designation.

PETALOSTOMA Meyrick, 1931, *Exot. Microlepidopt.* **4** : 123 (nom. praeocc.).
Type-species: *Petalostoma lygrodes* Meyrick, 1931, *ibid.* **4** : 123, by monotypy.
Petalostoma Meyrick, 1931, is a junior homonym of *Petalostoma* v. Lidth de Jeude, 1829 (Vermes); *Petalostomella* Fletcher, 1940, was proposed as the objective replacement name.

Originally described in the Oecophoridae; subsequently transferred to the Gelechiidae (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 23).

PETALOSTOMELLA Fletcher, 1940, *Entomologist's Rec. J. Var.* **52** : 109 (objective replacement name for *Petalostoma* Meyrick, 1931, nom. praeocc.).

Type-species: ***Petalostoma lygrodes*** Meyrick, 1931, *Exot. Microlepidopt.* **4** : 123, by monotypy of *Petalostoma* Meyrick, 1931.

Originally proposed in the Oecophoridae; as the objective replacement name it automatically follows *Petalostoma* Meyrick, 1931, to the Gelechiidae.

PEUCOTELES Meyrick, 1931, *Exot. Microlepidopt.* **4** : 57.

Type-species: ***Peucoteles herpestica*** Meyrick, 1931, *ibid.* **4** : 57, by monotypy.

PEXICOPIA Common, 1958, *Aust. J. Zool.* **6** : 271 [key], 278.

Type-species: ***Gelechia desmanthes*** Lower, 1898, *Proc. Linn. Soc. N.S.W.* **23** : 51, by original designation.

PHAEOTYPA Turner, 1944, *Trans. R. Soc. S. Aust.* **68** : 3 (objective replacement name for *Lophozancla* Turner, 1933, nom. praeocc.).

Type-species: ***Lophozancla stenochorda*** Turner, 1933, *ibid.* **57** : 175, by monotypy of *Lophozancla* Turner, 1933.

PHAETUSA Chambers, 1875, *Can. Ent.* **7** : 105 (nom. praeocc.).

Type-species: *Phaetusa plutella* Chambers, 1875, *ibid.* **7** : 106, by monotypy.

Phaetusa Chambers, 1875, is a junior homonym of *Phaetusa* Wagler, 1832 (Aves); currently considered to be a junior subjective synonym of *Evippe* Chambers, 1873 (Busck [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 500). *P. plutella* Chambers, 1875, is currently considered to be a junior subjective synonym of *Gelechia* (*Teleia*) *leuconota* Zeller, 1873, *Verh. zool.-bot. Ges. Wien* **23** : 268, pl. 3, fig. 21, (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 500).

PHANEROPHALLA Janse, 1960, *Moths S. Afr.* **6** : 206.

Type-species: ***Phanerophalla knysnaensis*** Janse, 1960, *ibid.* **6** : 207, figs, by original designation and monotypy.

****PHANOSCHISTA*** Meyrick, 1925, *Genera Insect.* **184** : 4 [key], 207.

Type-species: ***Tingentera meryntis*** Meyrick, 1908, *J. Bombay nat. Hist. Soc.* **18** : 455, by original designation and monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

PHARANGITIS Meyrick, 1905, *J. Bombay nat. Hist. Soc.* **16** : 597.

Type-species: ***Pharangitis spathias*** Meyrick, 1905, *ibid.* **16** : 597, by monotypy.

****PHATNOTIS*** Meyrick, 1913, *J. Bombay nat. Hist. Soc.* **22** : 180.

Type-species: ***Phatnotis factiosa*** Meyrick, 1913, *ibid.* **22** : 181, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1965, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **5** : 203).

****PHILARACHNIS*** Meyrick, 1925, *Genera Insect.* **184** : 11 [key], 247.

Type-species: ***Brachmia xerophaga*** Meyrick, 1914, *Entomologist's mon. Mag.* **50** : 219, by original designation and monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

****PHILOPTILA*** Meyrick, 1918, *Exot. Microlepidopt.* **2** : 111.

Type-species: ***Philoptila effrenata*** Meyrick, 1918, *ibid.* **2** : 111, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

‡*PHITHORIMAEA* Turner, 1919, *Proc. R. Soc. Qd* **31** : 125.
Incorrect subsequent spelling of *Phthorimaea* Meyrick, 1902.
Correct date of publication (1919, December 30th) taken from original wrapper.

PHLOEOCECIS Chrétien, 1908, *Bull. Soc. ent. Fr.* **1908** : 91.
Type-species: ***Phloeocecis cherregella*** Chrétien, 1908, *ibid.* **1908** : 92, by monotypy.
Phloeocecis fagoniae Meyrick, 1925, *Genera Insect.* **184** : 88, is an unnecessary objective replacement name for *P. cherregella* Chrétien, 1908. Meyrick stated: 'I alter the specific name, for which Arabic vernacular is no more permissible than French would be.' The name *cherregella* fulfils all the requirements of the *Int. Code zool. Nom.* The fact that *cherregella* was formed from an Arabic word does not make the name invalid.

PHLOEOGRAPTIS Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 256 [key], 393.
Type-species: ***Phloeograptis macrynta*** Meyrick, 1904, *ibid.* **29** : 393 [key], 394, by original designation.

PHOBETICA Turner, 1944, *Trans. R. Soc. S. Aust.* **68** : 3 (objective replacement name for *Idiozancla* Turner, 1939, nom. praeocc.).
Type-species: ***Idiozancla ignobilis*** Turner, 1939, *Pap. Proc. R. Soc. Tasm.* **1938** : 83, by monotypy of *Idiozancla* Turner, 1939.

‡*PHORICOPTERA* Stainton, 1854, *Insecta Br.*, Lepid.: Tineina : 76 [key].
Incorrect (multiple) original spelling of *Psoricoptera* Stainton, 1854. There is clear evidence in the original publication that the spelling ‡*Phoricoptera* is an inadvertent error. ‡*Phoricoptera* is used only once in the key, while *Psoricoptera* is used on pp. 100 and 313 [index] as well as in the legend to pl. 4.

PHOTODOTIS Meyrick, 1911, *Ann. Transv. Mus.* **2** : 229.
Type-species: ***Photodotis prochalina*** Meyrick, 1911, *ibid.* **2** : 229, by monotypy.
See also: ‡*Photodotus* Janse, 1917.

‡*PHOTODOTUS* Janse, 1917, *Check-List S. Afr. Lepid. Heterocera* : 179, ix [index].
Incorrect subsequent spelling of *Photodotis* Meyrick, 1911.

PHRICOGENES Meyrick, 1931, *Exot. Microlepidopt.* **4** : 71.
Type-species: ***Phricogenes sophronopa*** Meyrick, 1931, *ibid.* **4** : 72, by monotypy.

PHRIXOCRITA Meyrick, 1935, *Exot. Microlepidopt.* **4** : 561.
Type-species: ***Phrixocrita aegidopis*** Meyrick, 1935, *ibid.* **4** : 562, by monotypy.

PHTHORACMA Meyrick, 1921, *Ann. Transv. Mus.* **8** : 87.
Type-species: ***Phthoracma blanda*** Meyrick, 1921, *ibid.* **8** : 87, by monotypy.

PHTHORIMAEA Meyrick, 1902, *Entomologist's mon. Mag.* **38** : 103.
Type-species: ***Gelechia* (*Bryotropha*) *operculella*** Zeller, 1873, *Verh. zool.-bot. Ges. Wien* **23** : 262, pl. 3, fig. 17, by original designation and monotypy.
See also: ‡*Phithorimaea* Turner, 1919; ‡*Phthorimea* Diakonoff, 1967; ‡*Phthorimoea* Forbes, 1923; ‡*Phtorimaea* Povolný & Zakopal, 1951; ‡*Phtyorimaea* Turner, 1919; ‡*Pthorimaea* Issiki, 1957.

‡*PHTHORIMEA* Diakonoff, 1967, *Bull. U.S. natn. Mus.* **257** : 356 (legend to fig. 211).
Incorrect subsequent spelling of *Phthorimaea* Meyrick, 1902.

‡*PHTHORIMOEA* Forbes, 1923, *Lepid. N.Y.* : 276.
Incorrect subsequent spelling of *Phthorimaea* Meyrick, 1902.

‡*PHTORIMAEA* Povolný & Zakopal, 1951, *Ent. Listy* **14** : 97.
Incorrect subsequent spelling of *Phthorimaea* Meyrick, 1902.

‡*PHTYORIMAEA* Turner, 1919, *Proc. R. Soc. Qd* **31** : 125.
Incorrect subsequent spelling of *Phthorimaea* Meyrick, 1902.
Correct date of publication (1919, December 30th) taken from original wrapper.

PHYLOPATRIS Meyrick, 1923, *Exot. Microlepidopt.* **3** : 14.
Type-species: ***Phylopatris terpnodes*** Meyrick, 1923, *ibid.* **3** : 15, by monotypy.

PHYSOPTILA Meyrick, 1914, *J. Bombay nat. hist. Soc.*, **22** : 777.

Type-species: ***Physoptila scenica*** Meyrick, 1914, *ibid.* **22** : 777, by monotypy.

Originally described in the Physoptilidae; here transferred to the Gelechiidae (Hodges in litteris).

PICROPTERA Janse, 1960, *Moths S. Afr.* **6** : 186.

Type-species: ***Dichomeris orthacma*** Meyrick, 1926, *Ann. S. Afr. Mus.* **23** : 332, by original designation.

PILOCRATES Meyrick, 1920, *Exot. Microlepidopt.* **2** : 299.

Type-species: ***Pilocrates prograpta*** Meyrick, 1920, *ibid.* **2** : 299, by monotypy.

PITHANURGA Meyrick, 1921, *Ann. Transv. Mus.* **8** : 68.

Type-species: ***Pithanurga chariphila*** Meyrick, 1921, *ibid.* **8** : 68, by monotypy.

PITYOCONA Meyrick, 1918, *Exot. Microlepidopt.* **2** : 116.

Type-species: ***Pityocona xeropis*** Meyrick, 1918, *ibid.* **2** : 117, by monotypy.

****PLACANTHES*** Meyrick, 1923, *Exot. Microlepidopt.* **3** : 42.

Type-species: ***Placanthes xanthomorpha*** Meyrick, 1923, *ibid.* **3** : 42, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20).

****PLAGIOCROSSA*** Janse, 1954, *Moths S. Afr.* **5** : 347.

Type-species: ***Lecithocera picrodora*** Meyrick, 1913, *Ann. Transv. Mus.* **3** : 294, by original designation and monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 345).

PLATYEDRA Meyrick, 1895, *Handb. Br. Lepid.* : 605.

Type-species: ***Gelechia vilella*** Zeller, 1847, *Isis, Leipzig* **1847** : 845, by monotypy.

Erroneously placed as a subgenus of *Teleia* Heinemann, 1870 (Hering, 1932, *in* Brohmer, Ehrmann, Ulmer, *Tierwelt Mitteleur.*, Ergänzungsband (Schmett.) **1** : 113). *G. vilella* Zeller, 1847, is currently considered to be a junior subjective synonym of *Recurvaria subcinerea* Haworth, 1828, *Lepid. Br.* : 548 (Bradley, 1966, *Entomologist's Gaz.* **17** : 228).

Erroneously included in the Elachistidae by Popescu-Gorj, 1959, *Revue Biol.* **4** : 349.

See also: ‡*Aratrognathosia* Gozmány, 1968; *Pectinophora* Busck, 1917.

PLATYMACHA Meyrick, 1933, *Exot. Microlepidopt.* **4** : 357.

Type-species: ***Platymacha anthochroa*** Meyrick, 1933, *ibid.* **4** : 358, by monotypy.

PLATYPHALLA Janse, 1951, *Moths S. Afr.* **5** : 299.

Type-species: ***Platyphalla ochrinotata*** Janse, 1951, *ibid.* **5** : 300, figs, by original designation and monotypy.

PLECTROCOSMA Meyrick, 1921, *Ann. Transv. Mus.* **8** : 75.

Type-species: ***Plectrocosma centrophora*** Meyrick, 1921, *ibid.* **8** : 75, by monotypy.

****PLEXIPPICA*** Meyrick, 1912, *Ann. S. Afr. Mus.* **10** : 67.

Type-species: ***Plexippica verberata*** Meyrick, 1912, *ibid.* **10** : 67, by monotypy.

Originally described and currently placed in the Hyponomeutidae [= Yponomeutidae]; erroneously included in the Gelechiidae by Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21; 1969, *ibid.* **7** : 316, pl. 158, figs 1–1 b. Clarke confused *Brachmia verberata* Meyrick, 1912, *Ann. Transv. Mus.* **3** : 68 (Gelechiidae) with *Plexippica verberata* Meyrick, 1912, *Ann. S. Afr. Mus.* **10** : 67 (Yponomeutidae).

PLOCAMOSARIS Meyrick, 1912, *Trans. ent. Soc. Lond.* **1911** : 706.

Type-species: ***Plocamosaris pandora*** Meyrick, 1912, *ibid.* **1911** : 706, by monotypy.

Currently considered to be a junior subjective synonym of *Noeza* Walker, 1866 (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 18, 19), and therefore available as the subjective replacement name for *Noeza* Walker, 1866, nom. praeocc.

Originally described in the Xyloryctidae; subsequently included in the Oecophoridae (Meyrick, 1918, *Exot. Microlepidopt.* **2** : 224); currently placed in the Gelechiidae (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 18).

See also: *Neochrista* Meyrick, 1923.

POECILIA Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 281 (nom. praeocc.).

Type-species: *Phalaena* (*Tinea*) *gemmella* Linnaeus, 1758, *Syst. Nat.* (ed. 10) **1** : 539, by subsequent designation for *Stenolechia* Meyrick, 1894 : Meyrick, 1925, *Genera Insect.* **184** : 51.

Poecilia Heinemann, 1870, is a junior homonym of *Poecilia* Schneider, 1801 (Pisces); *Stenolechia* Meyrick, 1894, was proposed as the objective replacement name.

Incorrect type-species: *Recurvaria nivea* Haworth, 1828, *Lepid. Br.* : 554, designated by Meyrick, 1894, *Entomologists mon. Mag.* **30** : 230. When proposing the objective replacement name *Stenolechia*, Meyrick cited as the type-species '*nivea*, Hw.', which is not an originally included nominal species of *Poecilia* Heinemann, 1870. *Recurvaria nivea* Haworth, 1828, *Lepid. Br.* : 554, is an unjustified emendation of *Alucita nivella* Fabricius, 1794, *Ent. syst.* **3**(2) : 335, which is currently considered to be a junior subjective synonym of *Phalaena* (*Tinea*) *gemmella* Linnaeus, 1758 (Stainton, 1854, *Insecta Br.*, Lepid.: Tineina : 135). Meyrick, 1925, *Genera Insect.* **184** : 51, cited '*S. gemmella*, Linnaeus' as the type-species of *Stenolechia* Meyrick, 1894; this automatically designated the type-species of *Poecilia* Heinemann, 1870.

Incorrect type-species: *Gelechia* (*Brachmia*) *albiceps* Zeller, 1839, *Isis, Leipzig* **1839** : 202, designated by Meyrick, 1925, *Genera Insect.* **184** : 52. Apparently Meyrick inadvertently placed *Poecilia* Heinemann, 1870, in synonymy under *Parachronistis* Meyrick, 1925, when it should have been placed under its objective replacement name *Stenolechia* Meyrick, 1894, for which he had designated on page 51 *gemmella* as the type-species.

POGOCHAETIA Staudinger, 1879, *Horae Soc. ent. ross.* **15** : 310.

Type-species: ***Pogochaetia solitaria*** Staudinger, 1879, *ibid.* **15** : 310, by monotypy.

Correct date of publication (1879, November 1st) taken from 'Repartition des livraisons' issued with the 'Tables des matières' of volume **15**.

See also: *Chaetopogon* Rye, 1881; *Pogonochaetia* Rye, 1881.

POGONOCHAETIA Rye, 1881, *Zool. Rec.* (1879) **16,** index : 9.

Type-species: *Pogochaetia solitaria* Staudinger, 1879, *Horae Soc. ent. ross.* **15** : 310, by monotypy of *Pogochaetia* Staudinger, 1879.

Unjustified emendation of *Pogochaetia* Staudinger, 1879.

POLYHYMNO Chambers, 1874, *Can. Ent.* **6** : 246.

Type-species: ***Polyhymno luteostrigella*** Chambers, 1874, *ibid.* **6** : 247, by monotypy.

See also: *Copocercia* Zeller, 1877; *Oegoconiodes* Matsumura, 1931.

PORPODRYAS Meyrick, 1920, *Exot. Microlepidopt.* **2** : 304.

Type-species: ***Porpodryas prasinantha*** Meyrick, 1920, *ibid.* **2** : 305, by monotypy.

PRAGMATODES Walsingham, 1908, *Proc. zool. Soc. Lond.* **1907** : 928.

Type-species: ***Pragmatodes fruticosella*** Walsingham, 1908, *ibid.* **1907** : 929, pl. 51, fig. 10, by original designation and monotypy.

Correct date of publication (1908, June 4th) taken from original wrapper of the volume for 1908, part 1, p. [iv].

PRASODRYAS Meyrick, 1926, *Exot. Microlepidopt.* **3** : 287.

Type-species: ***Anorthosia fracticostella*** Walsingham, 1891, *Trans. ent. Soc. Lond.* **1891** : 110, pl. 5, fig. 45, pl. 7, fig. 84, by original designation.

PROACTICA Walsingham, 1904, *Entomologist's mon. Mag.* **40** : 215 [nomen nudum], 268.

Type-species: ***Proactica halimilignella*** Walsingham, 1904, *ibid.* **40** : 269, by original designation and monotypy.

On p. 215 (1904, September) without description or indication and associated species; made nomenclaturally available on p. 268 (1904, November). Junior subjective synonym of

Epiphthora Meyrick, 1888 (Meyrick, 1911, *Ann. Transv. Mus.* **2** : 229); currently considered to be a junior subjective synonym of *Apatetris* Staudinger, 1879 (Meyrick, 1918, *Exot. Microlepidopt.* **2** : 117).

PROADAMAS Meyrick, 1929, *Exot. Microlepidopt.* **3** : 527.
Type-species: ***Proadamas indefessa*** Meyrick, 1929, *ibid.* **3** : 528, by monotypy.

PROCHARISTA Meyrick, 1922, *Zool. Meded. Leiden* **7** : 82.
Type-species: ***Procharista sardonias*** Meyrick, 1922, *ibid.* **7** : 83, by monotypy.

PROCLESIS Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 83.
Type-species: ***Proclesis xanthoselene*** Walsingham, 1911, *ibid.* **4** : 83, fig. 20, pl. 3, fig. 4, by original designation and monotypy.
Currently considered to be a junior subjective synonym of *Deoclona* Busck, 1903 (Meyrick 1925, *Genera Insect.* **184** : 183).

PRODOSIARCHA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 257 [key], 330.
Type-species: ***Prodosiarcha loxodesma*** Meyrick, 1904, *ibid.* **29** : 330, by original designation.

****PROMENESTA*** Busck, 1914, *Proc. U.S. natn. Mus.* **47** : 21.
Type-species: ***Promenesta lithochroma*** Busck, 1914, *ibid.* **47** : 22, by original designation.
Originally described in the Gelechiidae; subsequently included in the Xyloryctidae (Meyrick, 1915, *Exot. Microlepidopt.* **1** : 411); currently placed in the Stenomidae (Busck, 1935, *Lepid. Cat.* **67** : 4).

PROMOLOPICA Meyrick, 1925, *Genera Insect.* **184** : 18 [key], 118.
Type-species: ***Promolopica epiphanta*** Meyrick, 1925, *ibid.* **184** : 118, by original designation and monotypy.
As the genus is monotypic, the generic description constitutes at the same time the description of the type-species, which generally has been attributed to Meyrick, 1926, *Exot. Microlepidopt.* **3** : 284.

PROPHORAULA Meyrick, 1922, *Trans. ent. Soc. Lond.* **1922** : 105.
Type-species: ***Prophoraula pyrrhopis*** Meyrick, 1922, *ibid.* **1922** : 106, by monotypy.

PROSELOTIS Meyrick, 1914, *Exot. Microlepidopt.* **1** : 276.
Type-species: ***Proselotis sceletodes*** Meyrick, 1914, *ibid.* **1** : 276, by monotypy.
See also: *Idiobela* Turner, 1919.

PROSODARMA Meyrick, 1925, *Genera Insect.* **184** : 5 [key], 244.
Type-species: ***Onebala fibularis*** Meyrick, 1921, *Zool. Meded. Leiden* **6** : 167, by original designation and monotypy.

PROSOMURA Turner, 1919, *Proc. R. Soc. Qd* **31** : 147.
Type-species: ***Prosomura symmetra*** Turner, 1919, *ibid.* **31** : 148, by monotypy.
Correct date of publication (1919, December 30th) taken from original wrapper.
Currently considered to be a junior subjective synonym of *Autosticha* Meyrick, 1886 (Meyrick, 1925, *Genera Insect.* **184** : 256).

PROSTOMEUS Busck, 1903, *Proc. U.S. natn. Mus.* **25** : 837.
Type-species: ***Prostomeus brunneus*** Busck, 1903, *ibid.* **25** : 838, pl. 31, fig. 25, by original designation and monotypy.
‡*Prostomeus* Busck, [1903, January 13th], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 504, nomen nudum, not accompanied by a description or indication, the included nominal species a nomen nudum.

PROTEODOXA Meyrick, 1938, *Explor. Parc natn. Albert Miss. G. F. de Witte* **14** : 15.
Type-species: ***Proteodoxa cirrhopa*** Meyrick, 1938, *ibid.* **14** : 15, by monotypy.

PROTOBATHRA Meyrick, 1916, *Exot. Microlepidopt.* **1** : 595.
Type-species: ***Protobathra erista*** Meyrick, 1916, *ibid.* **1** : 595, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the

Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21); currently placed in the Gelechiidae (Clarke, 1969, *ibid.* **7** : 331).

See also: *Scythropiodes* Matsumura, 1931.

PROTOLECHIA Meyrick, 1903, *Entomologist's mon. Mag.* **39** : 291.

Type-species: ***Gelechia mesochra*** Lower, 1894, *Trans. R. Soc. S. Aust.* **18** : 107, by original designation and monotypy.

See also: *Ardozyga* Lower, 1902.

*‡*PROTOLICHNIS* Janse, 1963, *Moths S. Afr.* **6** : 265 [key].

Incorrect subsequent spelling of *Protolychnis* Meyrick, 1925.

****PROTOLYCHNIS*** Meyrick, 1925, *Genera Insect.* **184** : 5 [key], 242.

Type-species: ***Lecithocera maculata*** Walsingham, 1881, *Trans. ent. Soc. Lond.* **1881** : 276, pl. 11, fig. 18, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 345); erroneously placed in the Gelechiidae by Clarke, 1969, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **7** : 336.

See also: ‡*Protolichnis* Janse, 1963.

‡*PSALMATHOCRITA* Pierce & Metcalfe, 1935, *Genitalia Tineid Families Br. Islands* : 4, 5.

Incorrect subsequent spelling of *Psamathocrita* Meyrick, 1925.

PSAMATHOCRITA Meyrick, 1925, *Genera Insect.* **184** : 15 [key], 40.

Type-species: ***Gelechia osseella*** Stainton, 1861, *Entomologist's Annu.* **1861** : 87, by original designation.

See also: ‡*Psalmathocrita* Pierce & Metcalfe, 1935; ‡*Psammathocrita* Gaede, 1937.

PSAMATHOSCOPA Meyrick, 1937, *Exot. Microlepidopt.* **5** : 96.

Type-species: ***Onebala simplex*** Walsingham, 1900, *Bull. Lpool Mus.* **3** : 2, by original designation and monotypy.

‡*PSAMMATHOCRITA* Gaede, 1937, *Lepid. Cat.* **79** : 42.

Incorrect subsequent spelling of *Psamathocrita* Meyrick, 1925.

****PSAMMORIS*** Meyrick, 1906, *J. Bombay nat. Hist. Soc.* **17** : 149.

Type-species: ***Psammoris carpaea*** Meyrick, 1906, *ibid.* **17** : 149, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).

PSEUDARLA Clarke, 1965, *Proc. U.S. natn. Mus.* **117** : 88.

Type-species: ***Pseudarla miranda*** Clarke, 1965, *ibid.* **117** : 89, figs 91, 92, by original designation and monotypy.

PSEUDOCHELARIA Dietz, 1900, *Ent. News* **11** : 352.

Type-species: ***Pseudochelaria pennsylvanica*** Dietz, 1900, *ibid.* **11** : 353, pl. 1, fig. 4, by original designation.

Incorrect type-species: *Pseudochelaria walsinghami* Dietz, 1900, *Ent. News* **11** : 352, pl. 1, fig. 3, designated by Meyrick, 1925, *Genera Insect.* **184** : 73. Dietz clearly stated on p. 353: 'It gives me pleasure to dedicate this species [*P. walsinghami*] to Lord Walsingham, who established the above genus [*Pseudochelaria*] and the type of which (*E. pennsylvanica* Wlsm.) is in my collection'. Apparently *Pseudochelaria* and *P. pennsylvanica* originated from Walsingham but were made nomenclaturally available by Dietz.

Junior subjective synonym of *Gelechia* Hübner, [1825] (Walsingham & Durrant, 1902, *Entomologist's mon. Mag.* **38** : 28); currently considered to be a valid genus (Busck, 1939, *Proc. U.S. natn. Mus.* **86** : 568 [key], 579).

****PSEUDOCRATES*** Meyrick, 1918, *Exot. Microlepidopt.* **2** : 99.

Type-species: ***Pseudocrates antisphena*** Meyrick, 1918, *ibid.* **2** : 99, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).

PSEUDOSYMMOCA Rebel, 1903, *Verh. zool.-bot. Ges. Wien* **53** : 413.

Type-species: ***Pseudosymmoca angustipennis*** Rebel, 1903, *ibid.* **53** : 413, fig., by monotypy.

Originally described in the Gelechiidae; subsequently transferred to the Tineidae (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 190).

PSEUDOTELEIA Amsel, 1935, *Mitt. zool. Mus. Berl.* **20** : 299.

Type-species: ***Pseudoteleia squamodorella*** Amsel, 1935, *ibid.* **20** : 299, pl. 11, figs 104–106, pl. 18, figs 73–76, by monotypy.

PSEUDOTELPHUSA Janse, 1958, *Moths S. Afr.* **6** : 68.

Type-species: ***Telphusa probata*** Meyrick, 1909, *Ann. Transv. Mus.* **2** : 11, pl. 4, fig. 4, by original designation.

Pseudotelphusa Janse, 1958, is not a junior homonym of *Pseudothelphusa* Saussure, 1857 (Crustacea). ‡*Pseudotelphusa* Marschall, 1873, is an incorrect subsequent spelling of *Pseudothelphusa* Saussure, 1857, and is therefore invalid and unavailable for purposes of homonymy.

See also: *Klaussattleria* Căpuşe, 1968; *Sattleria* Căpuşe, 1968.

****PSITTACASTIS*** Meyrick, 1909, *Trans. ent. Soc. Lond.* **1909** : 20.

Type-species: ***Psittacastis trierica*** Meyrick, 1909, *ibid.* **1909** : 21, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Oecophoridae (Meyrick, 1922, *Genera Insect.* **180** : 180).

PSORICOPTERA Stainton, 1854, *Insecta Br.*, Lepid.: Tineina :76 [key, ‡*Phoricoptera*, incorrect (multiple) original spelling], 100.

Type-species: ***Gelechia*** (***Chelaria***) ***gibbosella*** Zeller, 1839, *Isis, Leipzig* **1839** : 202, by monotypy.

There is clear evidence in the original publication that the spelling ‡*Phoricoptera* is an inadvertent error. ‡*Phoricoptera* is used only once in the key, while *Psoricoptera* is used on pp. 100 and 313 [index] as well as in the legend to pl. 4.

Junior subjective synonym of *Chelaria* Haworth, 1828 (Meyrick, 1925, *Genera Insect.* **184** : 155); *Hypatima* Hübner, [1825] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 113, 190). Currently considered to be a valid genus.

See also: ‡*Phoricoptera* Stainton, 1854.

****PSYCHRA*** Walsingham, 1907, *Fauna hawaii.* **1**(5) : 489.

Type-species: ***Psychra phycidiformis*** Walsingham, 1907, *ibid.* **1**(5) : 490, pl. 14, fig. 4, by original designation.

Currently considered to be a junior subjective synonym of *Thyrocopa* Meyrick, 1883 (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 190, 222).

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Cryptophasidae [= Xyloryctidae] (Fletcher, 1929, *ibid.* **11** : 190, 222).

‡*PTHORIMAEA* Issiki, 1957, *in* Esaki et alis, *Icon. Heterocerorum Japonicorum* [**1**] : 45.

Incorrect subsequent spelling of *Phthorimaea* Meyrick, 1902.

‡*PTILONOSTYCHIA* Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 191.

Incorrect subsequent spelling of *Ptilostonychia* Walsingham, 1911.

****PTILOSTICHA*** Meyrick, 1910, *Trans. ent. Soc. Lond.* **1910** : 440.

Type-species: ***Ptilosticha cyanoplaca*** Meyrick, 1910, *ibid.* **1910** : 441, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Schreckensteiniadae [= Heliodinidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 191).

PTILOSTONYCHIA Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 109.
Type-species: ***Ptilostonychia plicata*** Walsingham, 1911, *ibid.* **4** : 109, pl. 3, fig. 31, by original designation and monotypy.
See also: ‡*Ptilonostychia* Fletcher, 1929.

****PTILOTHYRIS*** Walsingham, 1897, *Trans. ent. Soc. Lond.* **1897** : 37.
Type-species: ***Ptilothyris purpurea*** Walsingham, 1897, *ibid.* **1897** : 38, pl. 2, fig. 2, by original designation and monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1965, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **5** : 215).

‡*PTOCHENUSA* Kirby, 1871, *Zool. Rec.* (1870) **7** : 422; 522 [index].
Incorrect subsequent spelling of *Ptocheuusa* Heinemann, 1870.

‡*PTOCHEUSA* Constant, 1892, *Bull. Soc. Hist. nat. Autun* **5** : 68.
Incorrect subsequent spelling of *Ptocheuusa* Heinemann, 1870.

PTOCHEUUSA Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 288.
Type-species: ***Gelechia (Brachmia) inopella*** Zeller, 1839, *Isis, Leipzig* **1839** : 201, by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 41.
Senior objective synonym of *Syneunetis* Wallengren, 1881. Junior subjective synonym of *Aristotelia* Hübner, [1825] (Meyrick, 1925, *Genera Insect.* **184** : 41); subgenus of *Aristotelia* Hübner, [1825] (Gaede, 1937, *Lepid. Cat.* **79** : 43). Currently considered to be a valid genus.
See also: ‡*Ptochenusa* Kirby, 1871; ‡*Ptocheusa* Constant, 1892; ‡*Ptochuusa* Le Marchand, 1947; *Syneunetis* Wallengren, 1881.

‡*PTOCHUUSA* Le Marchand, 1947, *Rev. fr. Lépidopt.* **11** : 157.
Incorrect subsequent spelling of *Ptocheuusa* Heinemann, 1870.

PTYCERATA Ely, 1910, *Proc. ent. Soc. Wash.* **12** : 69.
Type-species: ***Ptycerata busckella*** Ely, 1910, *ibid.* **12** : 69, by original designation and monotypy.

****PTYCHOTHRIX*** Walsingham, 1907, *Fauna hawaii.* **1**(5) : 489.
Type-species: ***Ptychothrix vagans*** Walsingham, 1907, *ibid.* **1**(5) : 489, pl. 14, fig. 3, by original designation and monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Cryptophasidae [= Xyloryctidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 192).

PTYCHOVALVA Janse, 1958, *Moths S. Afr.* **6** : 45.
Type-species: ***Gelechia obruta*** Meyrick, 1921, *Ann. Transv. Mus.* **8** : 72, by original designation.

PULICALVARIA Freeman, 1963, *Can. Ent.* **95** : 727.
Type-species: ***Recurvaria gibsonella*** Kearfott, 1907, *ibid.* **39** : 4, by original designation.
Currently considered to be a junior subjective synonym of *Coleotechnites* Chambers, 1880 (Hodges, 1965, *Ent. News* **76** : 264).

PYCNOBATHRA Lower, 1901, *Trans. R. Soc. S. Aust.* **25** : 80.
Type-species: ***Pycnobathra achroa*** Lower, 1901, *ibid.* **25** : 80, by monotypy.
Currently considered to be a junior subjective synonym of *Megacraspedus* Zeller, 1839 (Meyrick, 1925, *Genera Insect.* **184** : 33).

PYCNODYTIS Meyrick, 1918, *Ann. Transv. Mus.* **6** : 15.
Type-species: ***Pycnodytis erebaula*** Meyrick, 1918, *ibid.* **6** : 15, by monotypy.

PYCNOPOGON* Chrétien, 1922, *in* Oberthür, *Etud. lépid. comp.* **19(1) : 356 (nom. praeocc.).
Type-species: *Pycnopogon scabrellus* Chrétien, 1922, *ibid.* **19**(1) : 357, fig., by monotypy.
Pycnopogon Chrétien, 1922, is a junior homonym of *Pycnopogon* Loew, 1847 (Diptera). Currently considered to be a junior subjective synonym of *Cerostoma* Latreille, 1802 (Meyrick, 1936, *Exot. Microlepidopt.* **4** : 623). *Cerostoma scabrella* (Chrétien, 1922) is a junior secondary

homonym of *Cerostoma scabrella* (Linnaeus, 1761); *Cerostoma approbata* Meyrick, 1936, *ibid.* **4** : 623, was proposed as the objective replacement name.

Originally described in the Gelechiidae; subsequently transferred to the Plutellidae (Meyrick, 1936, *ibid.* **4** : 623).

‡*PYCNOSTOLA* Meyrick, 1918, *Ann. Transv. Mus.* **6** : 14.

Incorrect subsequent spelling of *Pyncostola* Meyrick, 1917.

PYNCOSTOLA Meyrick, 1917, *Entomologist's mon. Mag.* **53** : 113.

Type-species: ***Paltodora operosa*** Meyrick, 1909, *Ann. Transv. Mus.* **2** : 10, pl. 4, fig. 1, by original designation.

The type-species was cited by Meyrick as '*sperosa* Meyr.', which is an incorrect subsequent spelling of *operosa* Meyrick, 1909.

See also: ‡*Pycnostola* Meyrick, 1918; ‡*Pynocstola* Meyrick, 1918.

‡*PYNOCSTOLA* Meyrick, 1918, *Ann. Transv. Mus.* **6** : 13.

Incorrect subsequent spelling of *Pyncostola* Meyrick, 1917.

RADIONERVA Janse, 1951, *Moths S. Afr.* **5** : 228.

Type-species: ***Apatetris collecta*** Meyrick, 1921, *Ann. Transv. Mus.* **8** : 64 by original designation and monotypy.

RECURVARIA Haworth, 1828, *Lepid. Br.* : 547.

Type-species: ***Tinea nanella*** [Denis & Schiffermüller], 1775, *Ankündung syst. Werkes Schmett. Wienergegend* : 141, by subsequent designation: Walsingham, 1910, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 43.

The type-species was included by Haworth as '*nana*', with '*Tinea nanella* Hüb.' in synonymy. *Recurvaria nana* Haworth, 1828, *Lepid. Br.* : 554, is an unjustified emendation of *T. nanella* [Denis & Schiffermüller], 1775, which has been erroneously attributed to Hübner, [1805], *Samml. eur. Schmett.* **8**, pl. 39, fig. 267, by most authors.

Senior objective synonym of *Hinnebergia* Spuler, 1910.

See also: *Aphanaula* Meyrick, 1895; *Coleotechnites* Chambers, 1880; *Eidothea* Chambers, 1873; *Evagora* Clemens, 1860; *Hinnebergia* Spuler, 1910; *Sinoe* Chambers, 1873; *Telea* Stephens 1834.

REICHARDTIELLA Filipjev, 1931, *Trudy̆ Eksped. pamir. Eksped.* [*Pamir-Expedition* 1928. *Abhandlungen der Expedition.*] **8** : 167.

Type-species: ***Reichardtiella grisea*** Filipjev, 1931, *ibid.* **8** : 168, fig. 16, pl. 10, figs 5–7, by original designation and monotypy.

Originally not placed in a family; subsequently included in the Gelechiidae (Gaede, 1937, *Lepid. Cat.* **79** : 30).

REUTTIA Hofmann, 1898, *Dt. ent. Z. Iris* **10** : 228.

Type-species: ***Anacampsis subocellea*** Stephens, 1834, *Ill. Br. Ent.*, Haustellata **4** : 214, by original designation and monotypy.

Correct date of publication (1898, January 12th) taken from footnote on page [iv] (Inhalts-Uebersicht).

Currently considered to be a junior synonym of *Thiotricha* Meyrick, 1886 (Meyrick, 1925, *Genera Insect.* **184** : 101).

RHADINOPHYLLA Turner, 1919, *Proc. R. Soc. Qd* **31** : 166.

Type-species: ***Rhadinophylla siderosema*** Turner, 1919, *ibid.* **31** : 166, by monotypy.

Correct date of publication (1919, December 30th) taken from original wrapper.

RHINOSIA Treitschke, 1833, *Schmett. Eur.* **9**(2) : 9.

Type-species: ***Tinea ustalella*** Fabricius, 1794, *Ent. syst.* **3**(2) : 307, by subsequent designation: Duponchel, 1838, *in* Godart, *Hist. nat. Lépid. Papillons Fr.* **11** : 15.

The type-species was included by Treitschke and cited by Duponchel as '*ustulella*', which is an incorrect subsequent spelling of *Tinea ustalella* Fabricius, 1794.

Rhinosia Treitschke, 1833, is not a junior homonym of *Rhinotia* Kirby, 1818 (Coleoptera: Curculionidae), of which ‡*Rhinosia* Fitch, 1854, *Trans. N.Y. St. agric. Soc.* **13** : 186, is an incorrect subsequent spelling.

Incorrect type-species: *Alucita costella* Fabricius, 1775, *Syst. Ent.* : 668, designated by Boisduval, 1836, *Hist. nat. Insect.*, Lepid. **1** : 150. Boisduval in his lengthy Introduction, up to page 154, reviewed earlier classifications and designated up to four different type-species for each generic name. In his 'Exposé de notre méthode', from page 155–690, no type-designations were made for the genera he himself used. According to the provisions of the *Int. Code zool. Nom.*, Article 69 (a) (iii), a type-designation is eligible for consideration if the author states that it is the type ' . . . and if it is clear that he himself accepts it as the type-species'. Boisduval's type-designations though clearly stated do not fulfil the last requirement and so are invalid. Although Boisduval's 1836 work was well known, the type-designations in it have not been accepted in the past. Acceptance of Boisduval's type-designation places *Rhinosia* Treitschke, 1833, as a junior subjective synonym of *Ypsolophus* Fabricius, 1798, *Suppl. Ent. syst.* : 421, 505 (Plutellidae).

Currently considered to be a junior subjective synonym of *Dichomeris* Hübner, 1818 (Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 87).

****RHIPIDOCERA*** Amsel, 1952, *Bull. Soc. Fouad I. Ent.* **36** : 130.

Type-species: ***Rhipidocera monotona*** Amsel, 1952, *ibid.* **36** : 130, figs 5, 6, by original designation and monotypy.

Originally described in the Gelechiidae; currently considered to be a junior subjective synonym of *Crossotocera* Zerny, 1930, *in* Wagner, *Int. ent. Z.* **24** : 19 (Amsel, 1958, *Z. wien. ent. Ges.* (43. Jg) **69** : 74), which automatically places *Rhipidocera* Amsel, 1952, in the Oecophoridae. *R. monotona* Amsel, 1952, is currently considered to be a junior subjective synonym of *Crossotocera wagnerella* Zerny, 1930, *in* Wagner, *Int. ent. Z.* **24** : 20, the type-species (by monotypy) of *Crossotocera* Zerny, 1930 (Amsel, 1958, *Z. wien. ent. Ges.* (43. Jg) **69** : 74).

RHOBONDA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 802, (nom. praeocc.).

Type-species: *Rhobonda punctatella* Walker, 1864, *ibid.* **29** : 802, by monotypy.

Rhobonda Walker, 1864, is a junior homonym of *Rhobonda* Walker, 1863 (Lepidoptera: Glyphipterigidae); *Carna* Walker, 1864, was proposed as the objective replacement name.

Junior subjective synonym of *Anorthosia* Clemens, 1860 (Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 86); currently considered to be a junior subjective synonym of *Dichomeris* Hübner, 1818 (Meyrick, 1925, *Genera Insect.* **184** : 174).

RHYNCHOPACHA Staudinger, 1871, *Berl. ent. Z.* **14** : 303.

Type-species: ***Gelechia spiraeae*** Staudinger, 1871, *ibid.* **14** : 302, by monotypy.

Correct date of publication (1871, January, begin.) taken from distribution list, *ibid.* **14** : iii, footnote.

See also: *Cremona* Busck, 1934; *Epithectis* Meyrick, 1895; *Leobatus* Walsingham, 1904; *Ziminiola* Gerasimov, 1930.

RHYNCHOTONA Meyrick, 1923, *Exot. Microlepidopt.* **3** : 35.

Type-species: ***Rhynchotona phaeostrota*** Meyrick, 1923, *ibid.* **3** : 35, by monotypy.

RIFSERIA Hodges, 1966, *Proc. U.S. natn. Mus.* **119** : 62.

Type-species: ***Gelechia fuscotaeniaella*** Chambers, 1878, *Bull. U.S. Geol. Surv.* **4** : 89, by original designation and monotypy.

ROTUNDIVALVA Janse, 1951, *Moths S. Afr.* **5** : 238.

Type-species: ***Rotundivalva blanda*** Janse, 1951, *ibid.* **5** : 239, figs, by original designation and monotypy.

****SAGARANCONA*** Gozmány, 1964, *Acta zool. hung.* **10** : 111.

Type-species: ***Symmoca sericiella*** Walsingham, 1904, *Entomologist's mon. Mag.* **40** : 273, by original designation and monotypy.

Originally described and currently placed in the Symmocidae.

SAGARITIS Chambers, 1872, *Can. Ent.* **4** : 225 (nom. praeocc.).
Type-species: *Sagaritis gracilella* Chambers, 1872, *ibid.* **4** : 226, by monotypy.
Sagaritis Chambers, 1872, is a junior homonym of *Sagaritis* Billberg, 1820 (Crustacea). Junior subjective synonym of *Anorthosia* Clemens, 1860 (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 507); currently considered to be a junior subjective synonym of *Dichomeris* Hübner, 1818 (Meyrick, 1925, *Genera Insect.* **184** : 174). *S. gracilella* Chambers, 1872, is currently considered to be a junior subjective synonym of *Anorthosia punctipennella* Clemens, 1860, the type-species of *Anorthosia* Clemens, 1860 (Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 86).

****SARISOPHORA*** Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 256 [key], 403.
Type-species: ***Sarisophora leptoglypta*** Meyrick, 1904, *ibid.* **29** : 404, by original designation.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Gelechiidae: Lecithocerinae (Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 153); currently placed in the Lecithoceridae.
See also: ‡*Sarisophronia* Hartig, 1956; *Styloceros* Meyrick, 1904.

*‡*SARISOPHRONIA* Hartig, 1956, *Studi trent. Sci. nat.* **33** : 120.
Incorrect subsequent spelling of *Sarisophora* Meyrick, 1904.

SAROTORNA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 259 [key], 322.
Type-species: ***Sarotorna eridora*** Meyrick, 1904, *ibid.* **29** : 323, by monotypy.

SATHROGENES Meyrick, 1923, *Exot. Microlepidopt.* **3** : 2.
Type-species: ***Trichotaphe malachias*** Meyrick, 1913, *J. Bombay nat. Hist. Soc.* **22** : 179, by original designation and monotypy.

SATRAPODOXA Meyrick, 1925, *Genera Insect.* **184** : 9 [key], 132.
Type-species: ***Strobisia regia*** Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 267, by original designation and monotypy.

SATTLERIA Căpuşe, 1968, *Ent. Ber., Amst.* **28** : 18 (nom. praeocc.) (objective replacement name for *Pseudotelphusa* Janse, 1958).
Type-species: *Telphusa probata* Meyrick, 1909, *Ann. Transv. Mus.* **2** : 11, pl. 4, fig. 4, by original designation for *Pseudotelphusa* Janse, 1958.
Sattleria Căpuşe, 1968, is a junior homonym of *Sattleria* Povolný, 1965 (Lepidoptera: Gelechiidae). Unnecessary replacement name for *Pseudotelphusa* Janse, 1958, which is not a junior homonym of *Pseudothelphusa* Saussure, 1857 (Crustacea). ‡*Pseudotelphusa* Marschall, 1873, is an incorrect subsequent spelling of *Pseudothelphusa* Saussure, 1857, and is therefore invalid and unavailable for purposes of homonymy.
See also: *Klaussattleria* Căpuşe, 1968.

SATTLERIA Povolný, 1965, *Acta ent. bohemoslovaca* **62** : 490.
Type-species: ***Gelechia dzieduszyckii*** Nowicki, 1864, *Microlepid. Species nov.* : 20, pl., fig. 4, by original designation and monotypy.

SAUTEREOPSIS Povolný, 1965, *Acta ent. bohemoslovaca* **62** : 488.
Type-species: ***Gelechia terrestrella*** Zeller, 1872, *Stettin. ent. Ztg* **33** : 111, by original designation and monotypy.
Currently considered to be a junior subjective synonym of *Agonochaetia* Povolný, 1965 (Sattler, 1968, *Dt. ent. Z.*, N.F. **15** : 119).

****SCAEOSTREPTA*** Meyrick, 1931, *Exot. Microlepidopt.* **4** : 77.
Type-species: ***Scaeostrepta geranoptera*** Meyrick, 1931, *ibid.* **4** : 77, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).

SCEPTEA Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 108.
Type-species: ***Sceptea decedens*** Walsingham, 1911, *ibid.* **4** : 109, fig. 23, pl. 3, fig. 30, by original designation.
See also: ‡*Sceptia* McDunnough, 1939.

‡*SCEPTIA* McDunnough, 1939, *Mem. sth. Calif. Acad. Sci.* **2**(1) : 76.
Incorrect subsequent spelling of *Sceptea* Walsingham, 1911.

SCHEMATASPIS Meyrick, 1918, *Exot. Microlepidopt.* **2** : 144.
Type-species: ***Brachmia gradata*** Meyrick, 1910, *Rec. Ind. Mus.* **5** : 221, by original designation.

SCHEMATISTIS Meyrick, 1911, *Ann. Transv. Mus.* **3** : 67.
Type-species: ***Schematistis analoxa*** Meyrick, 1911, *ibid.* **3** : 68, by monotypy.
Correct date of publication (1911, April) taken from original wrapper.

SCHISTONOEA Forbes, 1931, *J. Dep. Agric. P. Rico* **15** : 378.
Type-species: ***Brachmia fulvidella*** Walsingham, 1897, *Proc. zool. Soc. Lond.* **1897** : 62, by original designation and monotypy.
Originally described in the Xylorictidae [= Xyloryctidae]; subsequently transferred to the Gelechiidae (Gaede, 1937, *Lepid. Cat.* **79** : 462).

SCHISTOPHILA Chrétien, 1899, *Bull. Soc. ent. Fr.* **1899** : 114.
Type-species: ***Schistophila laurocistella*** Chrétien, 1899, *ibid.* **1899** : 114, by monotypy.

SCHISTOVALVA Janse, 1960, *Moths S. Afr.* **6** : 194.
Type-species: ***Schistovalva trachyptera*** Janse, 1960, *ibid.* **6** : 195, figs, by original designation and monotypy.

SCHIZOVALVA Janse, 1951, *Moths S. Afr.* **5** : 270.
Type-species: ***Gelechia trisignis*** Meyrick, 1908, *Proc. zool. Soc. Lond.* **1908** : 725, by original designation.

SCHNEIDERERIA Weber, 1957, *Mitt. schweiz. ent. Ges.* **30** : 68.
Type-species: ***Schneidereria pistaciella*** Weber, 1957, *ibid.* **30** : 68, by monotypy.

SCHUETZEIA Spuler, 1910, *Schmett. Eur.* **2** : 373.
Type-species: [*Tinea*] *anthyllidella* Hübner, [1813], *Samml. eur. Schmett.* **8**, pl. 48, fig. 330, by subsequent designation: Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 200.
Junior objective synonym of *Aproaerema* Durrant, 1897. Junior subjective synonym of *Stomopteryx* Heinemann, 1870 (Fletcher, 1929, *ibid.* **11** : 200, 211).

****SCIEROPEPLA*** Meyrick, 1886, *Trans. N.Z. Inst.* **18** : 162 [key], 165.
Type-species: ***Scieropepla typhicola*** Meyrick, 1886, *ibid.* **18** : 165, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Xyloryctidae (Meyrick, 1890, *Trans. R. Soc. S. Aust.* **13** : 67).

SCINDALMOTA Turner, 1919, *Proc. R. Soc. Qd* **31** : 121.
Type-species: ***Scindalmota limata*** Turner, 1919, *ibid.* **31** : 122, by monotypy.
Correct date of publication (1919, December 30th) taken from original wrapper.

SCLEROCECIS Chrétien, 1908, *Bull. Soc. ent. Fr.* **1908** : 142.
Type-species: ***Sclerocecis pulverosella*** Chrétien, 1908, *ibid.* **1908** : 142, figs 1-4, by monotypy.
See also: ‡*Hypocecis* Walsingham, 1904.

SCLEROCOPA Meyrick, 1937, *Exot. Microlepidopt.* **5** : 97.
Type-species: ***Sclerocopa heliochra*** Meyrick, 1937, *ibid.* **5** : 97, by monotypy.

SCLEROGRAPTIS Meyrick, 1923, *Exot. Microlepidopt.* **3** : 31.
Type-species: ***Sclerograptis oxytypa*** Meyrick, 1923, *ibid.* **3** : 31, by monotypy.

SCLEROPHANTIS Meyrick, 1935, *Exot. Microlepidopt.* **4** : 586.
Type-species: ***Sclerophantis cyanocorys*** Meyrick, 1935, *ibid.* **4** : 587, by monotypy.

SCROBIPALPA Janse, 1951, *Moths S. Afr.* **5** : 199.

Type-species: ***Gelechia heliopa*** Lower, 1900, *Proc. Linn. Soc. N.S.W.* **25** : 417, by original designation.

See also: *Ergasiola* Povolný, 1967; *Euscrobipalpa* Povolný, 1967.

SCROBIPALPOPSIS Povolný, 1967, *Acta ent. Mus. natn. Pragae* **37** : 110.

Type-species: ***Gelechia petasitis*** Pfaffenzeller, 1867, *Stettin. ent. Ztg* **28** : 79, by original designation.

SCROBIPALPULA Povolný, 1964, *Čas. Čsl. Spol. ent.* **61** : 339.

Type-species: ***Gelechia psilella*** Herrich-Schäffer, 1854, *Syst. Bearb. Schmett. Eur.* **5** : 162 [key], 171; 1853, *ibid.* **5**, pl. 67, fig. 496 [non-binominal], by original designation.

See also: *Eurysacca* Povolný, 1967; *Magnifacia* Povolný, 1967.

SCYTHOSTOLA Meyrick, 1925, *Treubia* **6** : 429.

Type-species: ***Scythostola heptagramma*** Meyrick, 1925, *ibid.* **6** : 429, by monotypy.

SCYTHROPIODES Matsumura, 1931, 6000 *Ill. Insects Japan-Empire* : 1099.

Type-species: ***Scythropiodes seriatopunctata*** Matsumura, 1931, *ibid.* : 1099, fig., by PRESENT DESIGNATION.

Currently considered to be a junior subjective synonym of *Protobathra* Meyrick, 1916 (Inoue, 1954, *Check List Lepid. Japan* **1** : 72). *S. seriatopunctata* Matsumura, 1931, is currently considered to be a junior subjective synonym of *Protobathra leucostola* Meyrick, 1921, *Exot. Microlepidopt.* **2** : 436 (Inoue, 1954, *Check List Lepid. Japan* **1** : 72).

Originally described in the Hyponomeutidae [= Yponomeutidae]; subsequently transferred to the Gelechiidae (Inoue, 1954, *ibid.* **1** : 72).

SEMIOMERIS Meyrick, 1923, *Exot. Microlepidopt.* **2** : 626.

Type-species: ***Noeza pyretodes*** Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 277, by original designation and monotypy.

SEMNOLOCHA Meyrick, 1936, *Exot. Microlepidopt.* **5** : 49.

Type-species: ***Semnolocha pachysticta*** Meyrick, 1936, *ibid.* **5** : 49, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21); currently placed in the Gelechiidae (Clarke, 1969, *ibid.* **7** : 363).

SEMNOSTOMA Meyrick, 1918, *Exot. Microlepidopt.* **2** : 127.

Type-species: ***Semnostoma leucochalca*** Meyrick, 1918, *ibid.* **2** : 127, by original designation.

SEMOCHARISTA Meyrick, 1922, *Ark. Zool.* **14**(15) : 4.

Type-species: ***Semocharista idiospila*** Meyrick, 1922, *ibid.* **14**(15) : 4, by monotypy.

SEMODICTIS Meyrick, 1909, *Ann. Transv. Mus.* **2** : 16.

Type-species: ***Semodictis tetraptila*** Meyrick, 1909, *ibid.* **2** : 16, by original designation.

Junior subjective synonym of *Chelaria* Haworth, 1828 (Meyrick, 1925, *Genera Insect.* **184** : 155); currently considered to be a junior subjective synonym of *Hypatima* Hübner, [1825] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 113, 202).

SEMOPHYLAX Meyrick, 1932, *Exot. Microlepidopt.* **4** : 200.

Type-species: ***Psoricoptera apicepuncta*** Busck, 1911, *Proc. U.S. natn. Mus.* **40** : 206, pl. 9, fig. 35, by original designation and monotypy.

The type-species was included by Meyrick as '*apicipuncta*', which is an incorrect subsequent spelling of *Psoricoptera apicepuncta* Busck, 1911.

*‡*SIBAROMACHA* Lhomme, [1948], *Cat. Lépid. Fr. Belg.* **2** : 670.

Incorrect subsequent spelling of *Stibaromacha* Meyrick, 1928.

SICERA Chrétien, 1908, *Bull. Soc. ent. Fr.* **1908** : 144.

Type-species: ***Sicera albidella*** Chrétien, 1908, *ibid.* **1908** : 144, by monotypy.

‡*SILOTROGA* Kirby, 1871, *Zool. Rec.* (1870) **7** : 422; 522 [index].

Incorrect subsequent spelling of *Sitotroga* Heinemann, 1870.

*‡*SIMOCA* Weiler, 1877, *Verz. Schmett. Innsbruck Umgebung* [Separat-Abdruck aus dem Programme der k.k. Oberrealschule zu Innsbruck für das Studien-Jahr 1876–77] : 34.
Incorrect subsequent spelling of *Symmoca* Hübner, [1825].

SIMONEURA Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 72.
Type-species: ***Simoneura ophitis*** Walsingham, 1911, *ibid.* **4** : 73, fig. 16, pl. 2, fig. 29, by original designation and monotypy.
Doubtfully placed as a junior subjective synonym of *Commatica* Meyrick, 1909, by Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 238.

SINOE Chambers, 1873, *Can. Ent.* **5** : 229, 231.
Type-species: ***Sinoe fuscopalidella*** Chambers, 1873, *ibid.* **5** : 231, by monotypy.
Junior subjective synonym of *Recurvaria* Haworth, 1828 (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 500); currently considered to be a valid genus (Hodges, 1965, *Ent. News* **76** : 264).
S. fuscopalidella Chambers, 1873, is currently considered to be a junior subjective synonym of *Anacampsis robiniella* Fitch, 1859, *Rep. nox. and other Insects N.Y.* **5** : 54 (Hodges, 1965, *Ent. News* **76** : 264).

****SIOVATA*** Walker, 1866, *List Specimens lepid. Insects Colln Br. Mus.* **35** : 1837.
Type-species: ***Siovata pulcherrimella*** Walker, 1866, *ibid.* **35** : 1838, by monotypy.
Currently considered to be a junior subjective synonym of *Lecithocera* Herrich-Schäffer, 1853 (Meyrick, 1925, *Genera Insect.* **184** : 237), which automatically places the genus in the Lecithoceridae.

SIROGENES Meyrick, 1923, *Exot. Microlepidopt.* **3** : 3.
Type-species: ***Sirogenes thermophaea*** Meyrick, 1923, *ibid.* **3** : 3, by monotypy.
Currently considered to be a junior subjective synonym of *Ilingiotis* Meyrick, 1914 (Meyrick, 1925, *Genera Insect.* **184** : 190)

****SISYRODONTA*** Meyrick, 1922, *Ark. Zool.* **14**(15) : 5.
Type-species: ***Sisyrodonta ochrosidera*** Meyrick, 1922, *ibid.* **14**(15) : 6, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; here transferred to the Lecithoceridae (Common in litteris).

‡*SITITROGA* Lima, 1945, *Insetos Brasil* **5** : 273.
Incorrect subsequent spelling of *Sitotroga* Heinemann, 1870.

‡*SITOTREGA* Borg, 1932, *Lepid. Maltese Islands* : 23.
Incorrect subsequent spelling of *Sitotroga* Heinemann, 1870.

SITOTROGA Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)2(1) : 287.
Type-species: ***Alucita cerealella*** Olivier, 1789, *Encycl. Méth. Hist. nat.* **4**, Insecta [1] : 121, by monotypy.
See also: *Nesolechia* Meyrick, 1921; ‡*Silotroga* Kirby, 1871; ‡*Sititroga* Lima, 1945; ‡*Sitotrega* Borg, 1932; ‡ *Sitotrogus* Matsumura, 1931; *Syngenomictis* Meyrick, 1927.

‡*SITOTROGUS* Matsumura, 1931, 6000 *Ill. Insects Japan-Empire* : 1085.
Incorrect subsequent spelling of *Sitotroga* Heinemann, 1870.

SMENODOCA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 259 [key], 302.
Type-species: ***Smenodoca erebenna*** Meyrick, 1904, *ibid.* **29** : 303, by monotypy.

SOPHRONIA Hübner, [1825], *Verz. bekannter Schmett.* : 407.
Type-species: ***Tinea illustrella*** Hübner, 1796, *Samml. eur. Schmett.* **8** : 46, pl. 23, fig. 158, by monotypy.
Correct date of publication ([1825]) taken from Opinion 150, *Opin. Decl. int. Commn zool. Nom.* **2** : 166 (1943).

SOROTACTA Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 253.
Type-species: ***Sorotacta viridans*** Meyrick, 1914, *ibid.* **1914** : 254, by monotypy.

SPERMANTHRAX Meyrick, 1936, *Exot. Microlepidopt.* **4** : 624.
Type-species: ***Spermanthrax pycnostoma*** Meyrick, 1936, *ibid.* **4** : 625, by monotypy.

***_SPHAEROLBIA_** Meyrick, 1934, *Exot. Microlepidopt.* **4** : 513.
Type-species: ***Sphaerolbia chrematistis*** Meyrick, 1934, *ibid.* **4** : 513, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).

SPHAGIOCRATES Meyrick, 1925, *Genera Insect.* **184** : 11 [key], 183.
Type-species: ***Brachmia lusoria*** Meyrick, 1922, *Zool. Meded. Leiden* **7** : 87, by original designation and monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21); currently placed in the Gelechiidae (Clarke, 1969, *ibid.* **7** : 380).

SPHALERACTIS Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 258 [key], 328.
Type-species: ***Gelechia platyleuca*** Lower, 1897, *ibid.* **22** : 22, by original designation.

SPHENOCRATES Meyrick, 1925, *Genera Insect.* **184** : 4 [key], 234.
Type-species: ***Crocanthes aulodocha*** Meyrick, 1918, *Exot. Microlepidopt.* **2** : 98, by original designation and monotypy.

SPHENOGRYPA Meyrick, 1920, *Voyage Ch. Alluaud R. Jeannel Afr. or.* **2,** Microlepid. : 71.
Type-species: ***Sphenogrypa syncosma*** Meyrick, 1920, *ibid.* : 71, by original designation and monotypy.

SRIFERIA Hodges, 1966, *Proc. U.S. natn. Mus.* **119** : 65.
Type-species: ***Gelechia prorepta*** Meyrick, 1923, *Exot. Microlepidopt.* **3** : 19, by original designation and monotypy.
G. prorepta Meyrick, 1923, is an unnecessary objective replacement name for *Gelechia fulmenella* Busck, 1910, *Proc. ent. Soc. Wash.* **11** : 178, which is not a junior homonym of *Gelechia fulminella* Millière, 1883, *Annls Soc. linn. Lyon* **29** : 161, pl. 2, fig. 4.

STACHYOSTOMA Meyrick, 1923, *Exot. Microlepidopt.* 3 : 28.
Type-species: ***Stachyostoma psilodoxa*** Meyrick, 1923, *ibid.* **3** : 28, by monotypy.

‡*STAEBERHINUS* Rye, 1882, *Zool. Rec.* (1881) **18,** (index) : 13.
Incorrect subsequent spelling of *Stoeberhinus* Butler, 1881.

STAEBERRHINUS Rye, 1882, *Zool. Rec.* (1881) **18,** (index) : 13.
Type-species: *Stoeberhinus testaceus* Butler, 1881, *Ann. Mag. nat. Hist.* (5)**7** : 402, fig. 2, by monotypy of *Stoeberhinus* Butler, 1881.
Unjustified emendation of *Stoeberhinus* Butler, 1881. Not recorded by Neave, 1939–66, *Nomencl. zool.* **1–6.**

STAGMATURGIS Meyrick, 1923, *Exot. Microlepidopt.* **3** : 25.
Type-species: ***Stagmaturgis catharosema*** Meyrick, 1923, *ibid.* **3** : 25, by monotypy.

STEGASTA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 258 [key], 313.
Type-species: ***Stegasta variana*** Meyrick, 1904, *ibid.* **29** : 313 [key], 314, by original designation.

***_STELECHORIS_** Meyrick, 1925, *Genera Insect.* **184** : 8 [key], 243.
Type-species: ***Pachnistis exoema*** Meyrick, 1911, *J. Bombay nat. Hist. Soc.* **20** : 707, by original designation.
The type-species was cited by Meyrick as '*exaema*', which is an incorrect subsequent spelling of *P. exoema* Meyrick, 1911.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).

STENOLECHIA Meyrick, 1894, *Entomologist's mon. Mag.* **30** : 230 (objective replacement name for *Poecilia* Heinemann, 1870, nom. praeocc.).

Type-species: ***Phalaena*** **(*Tinea*)** ***gemmella*** Linnaeus, 1758, *Syst. Nat.* (ed. 10) **1** : 539, by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 51.

Incorrect type-species: *Recurvaria nivea* Haworth, 1828, *Lepid. Br.* : 554, designated by Meyrick, 1894, *Entomologist's mon. Mag.* **30** : 230. *R. nivea* Haworth, 1828, is not one of the originally included nominal species of *Poecilia* Heinemann, 1870, and therefore not eligible as the type-species of either *Poecilia* or its objective replacement name *Stenolechia*. *R. nivea* Haworth, 1828, is an unjustified emendation of *Alucita nivella* Fabricius, 1794, *Ent. syst.* **3**(2) : 335, which is currently considered to be a junior subjective synonym of *Phalaena* (*Tinea*) *gemmella* Linnaeus, 1758 (Stainton, 1854, *Insecta Br.*, Lepid.: Tineina : 135).

STENOPHERNA Lower, 1901, *Trans. R. Soc. S. Aust.* **25** : 78.

Type-species: ***Stenopherna chionocephala*** Lower, 1901, *ibid.* **25** : 79, by monotypy.

Currently considered to be a junior subjective synonym of *Apatetris* Staudinger, 1879 (Meyrick, 1925, *Genera Insect.* **184** : 22).

STENOVALVA Amsel, 1955, *Bull. Inst. r. Sci. nat. Belg.* **31**(83) : 9.

Type-species: ***Stenovalva ghorella*** Amsel, 1955, *ibid.* **31**(83) : 10, pl. 1, figs 7–9, by original designation and monotypy.

STENOVALVA Janse, 1958, *Moths S. Afr.* **6** : 33 (nom. praeocc.).

Type-species: *Gelechia albiflora* Meyrick, 1920, *Ann. S. Afr. Mus.* **17** : 283, by original designation and monotypy.

Stenovalva Janse, 1958, is a junior homonym of *Stenovalva* Amsel, 1955 (Lepidoptera: Gelechiidae); *Araeovalva* Janse, 1960, was proposed as the objective replacement name.

STEREMNIODES Meyrick, 1923, *Exot. Microlepidopt.* **3** : 37.

Type-species: ***Steremniodes sciactis*** Meyrick, 1923, *ibid.* **3** : 38, by monotypy.

STEREODMETA Meyrick, 1931, *Exot. Microlepidopt.* **4** : 65.

Type-species: ***Stereodmeta xylodeta*** Meyrick, 1931, *ibid.* **4** : 65, by monotypy.

STEREOMITA Braun, 1922, *Ent. News* **33** : 43.

Type-species: ***Stereomita andropogonis*** Braun, 1922, *ibid.* **33** : 44, by original designation and monotypy.

STERRHOSTOMA Meyrick, 1935, *Exot. Microlepidopt.* **4** : 587.

Type-species: ***Sterrhostoma heterogastra*** Meyrick, 1935, *ibid.* **4** : 587, by monotypy.

STIBARENCHES Meyrick, 1930, *Annln naturh. Mus. Wien* **44** : 228.

Type-species: ***Stibarenches bifissa*** Meyrick, 1930, *ibid.* **44** : 229, pl. 2, fig. 5, by monotypy.

****STIBAROMACHA*** Meyrick, 1928, *Bull. Hill Mus. Witley* **2** : 235.

Type-species: ***Gelechia ratella*** Herrich-Schäffer, 1854, *Syst. Bearb. Schmett. Eur.* **5** : 211; 1851, *ibid.* **5**, pl. 59, figs 427, 428 [non-binominal], by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Gelechiidae: Lecithocerinae (Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 153); currently placed in the Symmocidae (Gozmány, 1963, *Acta zool. hung.* **9** : 76).

See also: ‡*Sibaromacha* Lhomme, [1948].

STIGMASOPHRONIA Hartig, 1936, *Z. öst. EntVer.* **21** : 44 (objective replacement name for *Stigmatoptera* Hartig, 1936).

Type-species: *Stigmatoptera dumonti* Hartig, 1936, *ibid.* **21** : 45, pl. 2, fig. 11, pl. 3, figs 11 a-d, by monotypy of *Stigmatoptera* Hartig, 1936.

Hartig stated in a footnote on p. 44: 'Ich konnte nicht feststellen, ob dieser Name bereits praeoccupiert ist, in diesem Falle müsste für das Genus der Name *Stigmasophronia* eintreten.' Unnecessary replacement name for *Stigmatoptera* Hartig, 1936, which is not a junior homonym. ‡*Stigmatoptera* Saussure, 1859, is an incorrect subsequent spelling of *Stagmatoptera* Burmeister, 1838 (Orthoptera), and is therefore invalid and unavailable for purposes of homonymy.

STIGMATOPTERA Hartig, 1936, *Z. öst. EntVer.* **21** : 44.

Type-species: ***Stigmatoptera dumonti*** Hartig, 1936, *ibid.* **21** : 45, pl. 2, fig. 11, pl. 3, figs 11 a-d, by monotypy.

Stigmatoptera Hartig, 1936 is not a junior homonym. ‡*Stigmatoptera* Saussure, 1859, is an incorrect subsequent spelling of *Stagmatoptera* Burmeister, 1838 (Orthoptera), and is therefore invalid and unavailable for purposes of homonymy.

See also: *Stigmasophronia* Hartig, 1936.

STIPHROSTOLA Meyrick, 1923, *Exot. Microlepidopt.* **3** : 25.

Type-species: ***Stiphrostola longinqua*** Meyrick, 1923, *ibid.* **3** : 25, by monotypy.

STOCHASTICA Meyrick, 1938, in Caradja & Meyrick, *Dt. ent. Z. Iris* **52** : 6.

Type-species: ***Stochastica virgularia*** Meyrick, 1938, *ibid.* **52** : 6, by monotypy.

STOEBERHINUS Butler, 1881, *Ann. Mag. nat. Hist.* (5)**7** : 402.

Type-species: ***Stoeberhinus testaceus*** Butler, 1881, *ibid.* (5)**7** : 402, fig. 2, by monotypy.

See also: ‡*Staeberhinus* Rye, 1882; *Staeberrhinus* Rye, 1882.

‡*STOMOPTERIX* Turati, 1922, *Atti Soc. ital. Sci. nat.* **61,** legend to pl. 4, fig. 23.

Incorrect subsequent spelling of *Stomopteryx* Heinemann, 1870.

STOMOPTERYX Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 324.

Type-species: ***Gelechia detersella*** Zeller, 1847, *Isis, Leipzig* **1847** : 846, by monotypy.

See also: *Acraeologa* Meyrick, 1921; *Aproaerema* Durrant, 1897; *Inotica* Meyrick, 1913; *Schuetzeia* Spuler, 1910; ‡*Stomopterix* Turati, 1922; ‡*Stromopteryx* Pierce & Metcalfe, 1935.

STOMYLIA Snellen, 1878, *Tijdschr. Ent.* **21** : 142.

Type-species: ***Stomylia erosella*** Snellen, 1878, *ibid.* **21** : 142, pl. 8, figs 1–6, by monotypy.

Currently considered to be a junior subjective synonym of *Tituacia* Walker, 1864 (Meyrick, 1925, *Genera Insect.* **184** : 162). *S. erosella* Snellen, 1878, is currently considered to be a junior subjective synonym of *Tituacia deviella* Walker, 1864, the type-species of *Tituacia* Walker, 1864 (Meyrick, 1925, *Genera Insect.* **184** : 163).

STRENIASTIS Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 258 [key], 428.

Type-species: ***Paltodora thermaea*** Lower, 1897, *ibid.* **22** : 271, by monotypy.

STRENOPHILA Meyrick, 1913, *Ann. Transv. Mus.* **3** : 306.

Type-species: ***Strenophila hyptiota*** Meyrick, 1913, *ibid.* **3** : 306, by monotypy.

STREYELLA Janse, 1958, *Moths S. Afr.* **6** : 99.

Type-species: ***Streyella pallidigrisea*** Janse, 1958, *ibid.* **6** : 101, figs, by original designation and monotypy.

STROBISIA Clemens, 1860, *Proc. Acad. nat. Sci. Philad.* **1860** : 164.

Type-species: ***Strobisia iridipennella*** Clemens, 1860, *ibid.* **1860** : 164, by subsequent designation: Busck, 1903, *Proc. U.S. natn. Mus.* **25** : 905.

The type-species was cited by Busck as '*irridipennella*', which is an incorrect subsequent spelling of *S. iridipennella* Clemens, 1860.

See also: *Systasiota* Walsingham, 1910.

‡*STROMOPTERYX* Pierce & Metcalfe, 1935, *Genitalia Tineid Families Lepid. Br. Islands*, : iii [index].

Incorrect subsequent spelling of *Stomopteryx* Heinemann, 1870.

****STRYPHNOCOPA*** Meyrick, 1920, *Exot. Microlepidopt.* **2** : 306.

Type-species: ***Stryphnocopa trinotata*** Meyrick, 1920, *ibid.* **2** : 307, by monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick*, **1** : 21).

****STYLOCEROS*** Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 256 [key], 408.

Type-species: ***Styloceros cyclonitis*** Meyrick, 1904, *ibid.* **29** : 408 [key], 409, by original designation.

Styloceros Meyrick, 1904, is not a junior homonym. ‡*Styloceros* Gloger, 1841, is an incorrect subsequent spelling of *Stylocerus* Smith, 1827 (Mammalia), and is therefore invalid and unavailable for purposes of homonymy.

Currently considered to be a junior subjective synonym of *Sarisophora* Meyrick, 1904 (Meyrick, 1925, *Genera Insect.* **184** : 236), which automatically places *Styloceros* Meyrick, 1904, in the Lecithoceridae.

‡*SYDNESMICA* Turner, 1919, *Proc. R. Soc. Qd* **31** : 150.

Incorrect (multiple) original spelling of *Syndesmica* Turner, 1919. Each of the spellings '*Syndesmica*' and '*Sydnesmica*' is used once. From the Greek derivation of the name, which is cited by Turner, it is clear that *Syndesmica* is the correct spelling, while ‡*Sydnesmica* is an inadvertent error.

SYMBATICA Meyrick, 1910, *Ann. S. Afr. Mus.* **5** : 413.

Type-species: ***Symbatica cryphias*** Meyrick, 1910, *ibid.* **5** : 413, by monotypy.

SYMBOLISTIS Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 257 [key], 413.

Type-species: ***Symbolistis orophota*** Meyrick, 1904, *ibid.* **29** : 414, by original designation.

****SYMMACANTHA*** Gozmány, 1963, *Acta zool. hung.* **9** : 98.

Type-species: ***Symmoca sparsella*** Joannis, 1891, *Bull. Soc. ent. Fr.* **1891** : 84, by original designation and monotypy.

Originally described and currently placed in the Symmocidae.

‡*SYMMETRICHEMA* Povolný, 1967, *Acta ent. Mus. natn. Pragae* **37** : 58.

Incorrect (multiple) original spelling of *Symmetrischema* Povolný, 1967. There is clear evidence in the original publication that the spelling ‡*Symmetrichema* is an inadvertent error. ‡*Symmetrichema* is used only once on p. 58 under *striatellum*, while *Symmetrischema* is used more than 15 times on pp. 53–62.

SYMMETRISCHEMA Povolný, 1967, *Acta ent. Mus. natn. Pragae* **37** : 53, 58 [‡*Symmetrichema*, incorrect (multiple) original spelling].

Type-species: ***Phthorimaea plaesiosema*** Turner, 1919, *Proc. R. Soc. Qd* **31** : 126, by original designation.

There is clear evidence in the original publication that the spelling ‡*Symmetrichema* is an inadvertent error. ‡*Symmetrichema* is used only once on p. 58 under *striatellum*, while *Symmetrischema* is used more than 15 times on pp. 53–62.

See also: ‡*Symmetrichema* Povolný, 1967.

****SYMMOCA*** Hübner, [1825], *Verz. bekannter Schmett.* : 403.

Type-species: ***Tinea signella*** Hübner, 1796, *Samml. eur. Schmett.* **8** : 17, pl. 31, fig. 211, by subsequent designation: Meyrick, 1915, *Trans. N.Z.Inst.* **47** : 220.

Correct date of publication ([1825]) taken from Opinion 150, *Opin. Decl. int. Commn zool. Nom.* **2** : 166 (1943).

Originally described in the 'Enyphantes'; subsequently included in the Tineidae (Herrich-Schäffer, 1853, *Syst. Bearb. Schmett. Eur.* **5** : 33); Hyponomeutidae [= Yponomeutidae] (Frey, 1856, *Tineen Pterophoren Schweiz* : 63); Gelechi[i]dae (Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 364); Gelechiidae: Depressariinae [= Oecophoridae] (Spuler, 1910, *Schmett. Eur.* **2** : 344); Oecophoridae (Meyrick, 1915, *Trans. N.Z. Inst.* **47** : 220); Gelechiidae: Lecithocerinae (Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 153); Gelechiidae: Symmocinae (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 326); currently placed in the Symmocidae.

See also: *Asarista* Meyrick, 1935; *Conquassata* Gozmány, 1957; *Paradoris* Meyrick, 1907; *Parasymmoca* Rebel, 1903; ‡*Simoca* Weiler, 1877; *Symmoletria* Gozmány, 1963.

*†***SYMMOCITES*** Kusnezov, 1941, *Revision Amber Lepid.* : 54.

Type-species: †***Symmocites rohdendorfi*** Kusnezov, 1941, *ibid.* : 56, pl. 24, figs 39–42, by original designation and monotypy.

A fossil genus and species. Originally described in the Gelechiidae; here transferred to the Symmocidae.

****SYMMOCOIDES*** Amsel, 1939, *in* Hartig & Amsel, *Mem. Soc. ent. ital.* **17** : 73.

Type-species: ***Symmoca oxybiella*** Millière, 1872, *Petites Nouv. ent.* **1** : 172, by original designation.

Originally described in the Gelechiidae; subsequently included in the Gelechiidae: Symmocinae (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 341); currently placed in the Symmocidae.

***SYMMOLETRIA** Gozmány, 1963, *Acta zool. hung.* **9** : 74.
Type-species: ***Symmoletria sulamit*** Gozmány, 1963, *ibid.* **9** : 76, figs 7, 8, by original designation and monotypy.
Junior subjective synonym of *Symmoca* Hübner, [1825] (Kasy, 1966, *in* Gozmány, *Z. wien. ent. Ges.* (51. Jg) **77** : 70); currently considered to be a junior subjective synonym of *Parasymmoca* Rebel, 1903, **syn. n.,** which is a subgenus of *Symmoca* Hübner, [1825]. *S. sulamit* Gozmány, 1963, is currently considered to be a junior subjective synonym of *Hypatima latiusculella* Stainton, 1867, the type-species of *Parasymmoca* Rebel, 1903 (Kasy, 1966, *in* Gozmány, *Z. wien. ent. Ges.* (51. Jg) **77** : 70).
Originally described and currently placed in the Symmocidae.

SYMPHANACTIS Meyrick, 1925, *Genera Insect.* **184** : 15 [key], 101.
Type-species: ***Ptocheuusa hetaera*** Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 231, by original designation and monotypy.

SYNACTIAS Meyrick, 1931, *J. Linn. Soc.* **37** : 278.
Type-species: ***Synactias micranthis*** Meyrick, 1931, *ibid.* **37** : 278, by monotypy.

SYNCATHEDRA Meyrick, 1923, *Exot. Microlepidopt.* **3** : 37.
Type-species: ***Syncathedra criminata*** Meyrick, 1923, *ibid.* **3** : 37, by monotypy.

SYNCOPACMA Meyrick, 1925, *Genera Insect.* **184** : 14 [key], 72.
Type-species: ***Telphusa acrophylla*** Meyrick, 1912, *Ann. Transv. Mus.* **3** : 65, by original designation and monotypy.
Currently considered to be a junior subjective synonym of *Harpagus* Stephens, 1834, **syn. n.,** and therefore available as the subjective replacement name for *Harpagus* Stephens, 1834, nom. praeocc. *T. acrophylla* Meyrick, 1912, is currently considered to be a junior subjective synonym of *Anacampsis oxyspila* Meyrick, 1909, *Ann. S. Afr. Mus.* **5** : 351 (Janse, 1951, *Moths S. Afr.* **5** : 262).

SYNCRATOMORPHA Meyrick, 1929, *Exot. Microlepidopt.* **3** : 509.
Type-species: ***Syncratomorpha euthetodes*** Meyrick, 1929, *ibid.* **3** : 509, by monotypy.

SYNDESMICA Turner, 1919, *Proc. R. Soc. Qd* **31** : 150 [also as ‡*Sydnesmica*, incorrect (multiple) original spelling].
Type-species: ***Syndesmica homogenes*** Turner, 1919, *ibid.* **31** : 150, by monotypy.
Correct date of publication (1919, December 30th) taken from original wrapper.

SYNEUNETIS Wallengren, 1881, *Ent. Tidskr.* **2** : 95.
Type-species: *Gelechia* (*Brachmia*) *inopella* Zeller, 1839, *Isis, Leipzig* **1839** : 201, by monotypy.
Junior objective synonym of *Ptocheuusa* Heinemann, 1870. Junior subjective synonym of *Aristotelia* Hübner, [1825] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 24, 214).
See also: ‡*Syneuntis* Fletcher, 1929.

‡*SYNEUNTIS* Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 24, 214.
Incorrect subsequent spelling of *Syneunetis* Wallengren, 1881.

SYNGELECHIA Janse, 1958, *Moths S. Afr.* **6** : 97.
Type-species: ***Gelechia psimythota*** Meyrick, 1913, *Ann. Transv. Mus.* **3** : 293, by original designation and monotypy.

SYNGENOMICTIS Meyrick, 1927, *Insects Samoa* **3** : 78.
Type-species: ***Syngenomictis aenictopa*** Meyrick, 1927, *ibid.* **3** : 78, by monotypy.
Currently considered to be a junior subjective synonym of *Sitotroga* Heinemann, 1870 (Meyrick, 1929, *Exot. Microlepidopt.* **3** : 483). *S. aenictopa* Meyrick, 1927, is currently con-

sidered to be a junior subjective synonym of *Nesolechia horogramma* Meyrick, 1921, the type-species of *Nesolechia* Meyrick, 1921 (Clarke, 1969, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **7** : 372, 423).

SYNOMOTIS Meyrick, 1883, *Entomologist's mon. Mag.* **20** : 33.
Type-species: ***Synomotis epicapna*** Meyrick, 1883, *ibid.* **20** : 33, by monotypy.
Currently considered to be a junior subjective synonym of *Thyrocopa* Meyrick, 1883 (Walsingham, 1907, *Fauna hawaii.* **1**(5) : 492).
Originally described in the Gelechi[i]dae; subsequently transferred to the Cryptophasidae [= Xyloryctidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 214, 222).

SYNTHESIOPALPA Povolný, 1966, *Acta ent. bohemoslovaca* **63** : 147.
Type-species: *Gelechia fornacaria* Meyrick, 1913, *Ann. Transv. Mus.* **3** : 289, by original designation and monotypy.
Junior objective synonym of *Trychnopalpa* Janse, 1958.

SYRMADAULA Meyrick, 1918, *Ann. Transv. Mus.* **6** : 26.
Type-species: ***Syrmadaula automorpha*** Meyrick, 1918, *ibid.* **6** : 26, by monotypy.

****SYSSYMMOCA*** Gozmány, 1963, *Acta zool. hung.* **9** : 128.
Type-species: ***Syssymmoca sahib*** Gozmány, 1963, *ibid.* **9** : 129, figs 66–68, by original designation and monotypy.
Originally described and currently placed in the Symmocidae.

SYSTASIOTA Walsingham, 1910, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 28.
Type-species: ***Systasiota leucura*** Walsingham, 1910, *ibid.* **4** : 29, fig. 8, pl. 1, fig. 25, by original designation and monotypy.
Currently considered to be a junior subjective synonym of *Strobisia* Clemens, 1860 (Meyrick, 1925, *Genera Insect.* **184** : 130).

TABERNILLAEA Meyrick, 1925, *Genera Insect.* **184** : 20 [key], 85; 285 [index].
Type-species: *Tabernillaia ephialtes* Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 54, fig. 14, pl. 2, fig. 12, by original designation for and monotypy of *Tabernillaia* Walsingham, 1911.
Unjustified emendation of *Tabernillaia* Walsingham, 1911.

TABERNILLAIA Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 53.
Type-species: ***Tabernillaia ephialtes*** Walsingham, 1911, *ibid.* **4** : 54, fig. 14, pl. 2, fig. 12, by original designation and monotypy.
See also: *Tabernillaea* Meyrick, 1925.

‡*TACHIPTILIA* Chambers, 1878, *Bull. U.S. geol. geogr. Surv. Territ.* **4** : 163.
Incorrect subsequent spelling of *Tachyptilia* Heinemann, 1870.

‡*TACHOPTILIA* Daltry, 1926, *Trans. a. Rep. Staffs. Fld Club* **60** : 113.
Incorrect subsequent spelling of *Tachyptilia* Heinemann, 1870.

TACHYPTILIA Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 321.
Type-species: [*Phalaena*] *populella* Clerck, 1759, *Icon. Insect. rariorum* **1**, pl. 11, fig. 5, by subsequent designation: Walsingham, 1910, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 33.
The type-species was included by Heinemann as '*Populella* L.', and cited by Walsingham as '[*Ph. Tinea*] *populella* Cl.'
Junior objective synonym of *Anacampsis* Curtis, 1827.
See also: ‡*Tachiptilia* Chambers, 1878; ‡*Tachoptilia* Daltry, 1926; ‡*Tachyptilix* Hartmann, 1880; ‡*Trachyphilia* Le Marchand, 1947; ‡*Trachyptilia* Le Marchand, 1947; ‡*Tuchyptilia* Kirby, 1871.

‡*TACHYPTILIX* Hartmann, 1880, *Mitt. münch. ent. Ver.* **4** : 25.
Incorrect subsequent spelling of *Tachyptilia* Heinemann, 1870.

TAHLA Dumont, 1932, *Livre Cent. Soc. ent. Fr.* : 716.
Type-species: ***Tahla zadiella*** Dumont, 1932, *ibid.* : 716, figs 23–26, by monotypy.

TANYCYTTARA Turner, 1933, *Trans. R. Soc. S. Aust.* **57** : 174.

Type-species: ***Tanycyttara xanthomochla*** Turner, 1933, *ibid.* **57** : 174, by monotypy.

TAPHROSARIS Meyrick, 1922, *Trans. ent. Soc. Lond.* **1922** : 104.

Type-species: ***Taphrosaris malthacopa*** Meyrick, 1922, *ibid.* **1922** : 104, by monotypy.

TAYGETE Chambers, 1873, *Can. Ent.* **5** : 229, 231.

Type-species: ***Evagora difficilisella*** Chambers, 1872, *ibid.* **4** : 66, by monotypy.

Taygete Chambers, 1873, is not a junior homonym of *Taygetis* Hübner, [1819] (Lepidoptera: Rhopalocera). Senior subjective synonym of *Epithectis* Meyrick, 1895, which has been used as the subjective replacement name (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 501). Here considered to be a valid genus. **Gen. rev.** *T. difficilisella* Chambers, 1872, is currently considered to be a junior subjective synonym of *Gelechia attributella* Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 593 (Walsingham, 1882, *Trans. Am. ent. Soc.* **10** : 182).

****TECHNOGRAPHA*** Meyrick, 1925, *Genera Insect.* **184** : 12 [key], 207.

Type-species: ***Tingentera ephestris*** Meyrick, 1908, *J. Bombay nat. Hist. Soc.* **18** : 454, by original designation and monotypy.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).

TECIA Kieffer & Jörgensen, 1910, *Zentbl. Bakt. ParasitKde* (2. Abt.) **27** : 375.

Type-species: ***Tecia mendozella*** Kieffer & Jörgensen, 1910, *ibid.* **27** : 375, by monotypy.

Tecia and *T. mendozella* originated from Strand but were used and unintentionally made nomenclaturally available by Kieffer & Jörgensen prior to their proposal and description by Strand, 1911, *Berl. ent. Z.* **55** : 165 [*Tecia*], 166, figs 1–3 [*mendozella*].

TELEA Stephens, 1834, *Ill. Br. Ent.*, Haustellata **4** : 244 (nom. praeocc.).

Type-species: [*Phalaena*] *leucatella* Clerck, 1759, *Icon. Insect. rariorum* **1**, pl. 11, fig. 3 [as ‡*leucattella*, incorrect original spelling]; 1864, *ibid.* **2**, Register : [2], by subsequent designation: Westwood, 1840, *Introd. mod. Classif. Insects* **2**, *Synopsis Genera Br. Insects* : 111.

Telea Stephens, 1834, is a junior homonym of *Telea* Hübner, [1819] (Lepidoptera: Saturniidae). Senior objective synonym of *Aphanaula* Meyrick, 1895. Currently considered to be a junior subjective synonym of *Recurvaria* Haworth, 1828 (Hodges, 1965, *Ent. News* **76** : 262).

The type-species was included by Stephens as '*Ph. Ti. leucatella* Linné' and cited by Westwood as '*P. T. leucatella* L.'

The type-designations by Westwood, 1840, *Introd. mod. Classif. Insects* **2**, *Synopsis Genera Br. Insects*, have been validated by the Int. Commn zool. Nom., 1922, *in* Opinion 71, *Smithson. misc. Collns* **73** : 16–18.

TELEIA Heinemann, 1870, *Schmett. Dtl. Schweiz* (2)**2**(1) : 272 (nom. praeocc.).

Type-species: [*Tinea*] *vulgella* Hübner, [1813], *Samml. eur. Schmett.* **8**, pl. 50, fig. 346, by subsequent designation: Meyrick, 1925, *Genera Insect.* **184** : 69.

Teleia Heinemann, 1870, is a junior homonym of *Teleia* Hübner, [1825] (Lepidoptera: Tortricidae); *Teleiodes* Sattler, 1960, was proposed as the objective replacement name. Junior subjective synonym of *Telphusa* Chambers, 1872 (Meyrick, 1925, *Genera Insect.* **184** : 69); subgenus of *Gelechia* Hübner, [1825] (Snellen, 1882, *Vlinders Nederl.*, Microlepid. : 661).

See also: ‡*Feleia* Christoph, 1882; *Platyedra* Meyrick, 1895; ‡*Teleja* Turati, 1924; ‡*Telia* Kirby, 1879; ‡*Tellia* Busck, 1903.

TELEIODES Sattler, 1960, *Dt. ent. Z.*, N.F. **7** : 16 and 17 [keys], 63 (objective replacement name for *Teleia* Heinemann, 1870, nom. praeocc.).

Type-species: [***Tinea***] ***vulgella*** Hübner, [1813], *Samml. eur. Schmett.* **8**, pl. 50, fig. 346, by subsequent designation for *Teleia* Heinemann, 1870: Meyrick, 1925, *Genera Insect.* **184** : 69.

TELEIOPSIS Sattler, 1960, *Dt. ent. Z.*, N.F. **7** : 16 and 17 [keys], 66.

Type-species: ***Recurvaria diffinis*** Haworth, 1828, *Lepid. Br.* : 551, by original designation.

‡*TELEJA* Turati, 1924, *Atti Soc. ital. Sci. nat.* **63** : 161.

Incorrect subsequent spelling of *Teleia* Heinemann, 1870.

TELEPHATA Meyrick, 1916, *Exot. Microlepidopt.* **1** : 592.

Type-species: **Telephata cheramopis** Meyrick, 1916, *ibid.* **1** : 593, by monotypy.

TELEPHILA Meyrick, 1923, *Exot. Microlepidopt.* **2** : 626.

Type-species: **Ypsolophus schmidtiellus** Heyden, 1848, *in* Koch, *Isis, Leipzig* **1848** : 954, by original designation.

The type-species was cited by Meyrick as '*schmidiella* Heyd.', which is an incorrect subsequent spelling of *Ypsolophus schmidtiellus* Heyden, 1848.

*_**TELEPHIRCA**_ Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 341.

Type-species: **Oecophora quadrifariella** Mann, 1855, *Verh. zool.-bot. Ver. Wien* **5** : 563, by original designation and monotypy.

Originally described in the Gelechiidae: Symmocinae; currently placed in the Symmocidae.

‡*TELEPHUSA* Beirne, 1938, *Entomologist* **71** : 228.

Incorrect subsequent spelling of *Telphusa* Chambers, 1872.

‡*TELIA* Kirby, 1879, *Zool. Rec.* (1877) **14,** (Insecta) : 185.

Incorrect subsequent spelling of *Teleia* Heinemann, 1870.

‡*TELLIA* Busck, 1903, *Proc. U.S. natn. Mus.* **25** : 813.

Incorrect subsequent spelling of *Teleia* Heinemann, 1870.

TELPHUSA Chambers, 1872, *Can. Ent.* **4** : 132.

Type-species: **Telphusa curvistrigella** Chambers, 1872, *ibid.* **4** : 133, by monotypy.

Telphusa Chambers, 1872, **nom. rev.**, is not a junior homonym of ‡*Telphusa* Latreille, 1828. The latter is an incorrect subsequent spelling of *Thelphusa* Latreille, 1819 (Crustacea), and is therefore invalid and unavailable for purposes of homonymy. *Xenolechia* Meyrick, 1895 (Kloet & Hincks, 1945, *Check List Br. Insects* : 127), and *Adrasteia* Chambers, 1872 (Sattler, 1960, *Dt. ent. Z.*, N.F. **7** : 63, 64), have been used as subjective replacement names for *Telphusa* Chambers, 1872, which was erroneously considered to be a junior homonym of ‡*Telphusa* Latreille, 1828. Junior subjective synonym of *Gelechia* Hübner, [1825] (Chambers, 1872, *Can. Ent.* **4** : 174). Currently considered to be a valid genus. *T. curvistrigella* Chambers, 1872, is currently considered to be a junior subjective synonym of *Gelechia longifasciella* Clemens, 1863, *Proc. ent. Soc. Philad.* **2** : 12 (Chambers, 1872, *Can. Ent.* **4** : 174).

See also: *Adrasteia* Chambers, 1872; *Geniadophora* Walsingham, 1897; *Teleia* Heinemann, 1870; ‡*Telephusa* Beirne, 1938; *Xenolechia* Meyrick, 1895.

*_**TENIETA**_ Amsel, 1942, *Veröff. dt. Kolon. u. Übersee-Mus. Bremen* **3** : 221.

Type-species: **Epidola albidella** Rebel, 1901, *Dt. ent. Z. Iris* **13** : 166, by monotypy.

Originally not placed in a family, but associated with *Epidola* Staudinger, 1859, which, in the same publication, was included in the Scythrididae; subsequently included in the Gelechiidae: Symmocinae (Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 337); currently placed in the Symmocidae.

TEUCHOPHANES Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 274.

Type-species: **Teuchophanes leucopleura** Meyrick, 1914, *ibid.* **1914** : 274, by monotypy.

*_**TEUCRODOXA**_ Meyrick, 1925, *Genera Insect.* **184** : 11 [key], 206.

Type-species: **Mnesteria spiculifera** Meyrick, 1918, *Exot. Microlepidopt.* **2** : 152, by original designation.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).

*_THALAMARCHIS_ Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 256 [key], 435 (nom. praeocc.).

Type-species: *Cryptolechia alveola* Felder & Rogenhofer, 1875, *Reise öst. Fregatte Novara*, Zool. Theil, **2**, pl. 140, fig. 35, by monotypy.

Thalamarchis Meyrick, 1904, is a junior homonym of *Thalamarchis* Meyrick, 1897 (Lepidoptera: Pyralidae); *Thalamarchella* Fletcher, 1940, *Entomologist's Rec. J. Var.* **52** : 18, was proposed as the objective replacement name.

Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Cryptophasidae [= Xyloryctidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 219); Thalamarchidae (Turner, 1939, *Proc. Linn. Soc. N.S.W.* **64** : 335); currently placed in the Oecophoridae (Common, 1964, *J. ent. Soc. Qd* **3** : 7).

****THANATOVENA*** Gozmány, 1957, *Annls hist.-nat. Mus. natn. hung.*, S.N. **8** : 343.

Type-species: ***Symmoca aegrella*** Walsingham, 1908, *Proc. zool. Soc. Lond.* **1907** : 949, pl. 52, fig. 2, by original designation and monotypy.

Originally described in the Gelechiidae; Symmocinae; currently placed in the Symmocidae.

THAUMATURGIS Meyrick, 1934, *Exot. Microlepidopt.* **4** : 449.

Type-species: ***Thaumaturgis craterocrossa*** Meyrick, 1934, *ibid.* **4** : 449, by monotypy.

****THEATRIA*** Walsingham, 1912, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 116.

Type-species: ***Theatria spudasma*** Walsingham, 1912, *ibid.* **4** : 116, fig. 25, pl. 4, fig. 4, by original designation and monotypy.

Currently considered to be a junior subjective synonym of *Peleopoda* Zeller, 1877, *Horae Soc. ent. ross.* **13** : 385, type-species: *Peleopoda lobitarsis* Zeller, 1877, *ibid.* **13** : 387, by monotypy (Duckworth, 1970, *Smithson. Contr. Zool.* **48** : 3).

Originally described in the Gelechiadae [= Gelechiidae]; subsequently included in the Cryptophasidae [= Xyloryctidae], (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 151, 219); currently placed in the Oecophoridae (Duckworth, 1970, *Smithson. Contr. Zool.* **48** : 3).

THEISOA Chambers, 1874, *Can. Ent.* **6** : 75.

Type-species: ***Theisoa bifasciella*** Chambers, 1874, *ibid.* **6** : 76, by monotypy.

Currently considered to be a junior subjective synonym of *Helice* Chambers, 1873, nom. praeocc., for which it is used as the subjective replacement name (Braun, 1919, *Can. Ent.* **51** : 203). *T. bifasciella* Chambers, 1874, is currently considered to be a junior subjective synonym of *Oecophora constrictella* Zeller, 1873, *Verh. zool.-bot. Ges. Wien* **23** : 291, pl. 4, fig. 32 (Busck, 1909, *Proc. ent. Soc. Wash.* **11** : 94).

Originally not placed in a family; subsequently included in the Elachistidae (Busck, 1909, *ibid.* **11** : 94); currently placed in the Gelechiid[ae] (Braun, 1919, *Can. Ent.* **51** : 203).

See also: *Cacelice* Busck, 1902.

THELYASCETA Meyrick, 1923, *Exot. Microlepidopt.* **3** : 27.

Type-species: ***Dasycera nonstrigella*** Chambers, 1878, *Bull. U.S. geol. geogr. Surv. Territ.* **4** : 92, by original designation and monotypy.

THIOGNATHA Meyrick, 1920, *Voyage Ch. Alluaud R. Jeannel Afr. or.* **2**, Microlepid. : 74.

Type-species: ***Thiognatha metachalca*** Meyrick, 1920, *ibid.* : 74, by original designation and monotypy.

‡*THIOTHRICHA* Hartig, 1956, *Studi trent. Sci. nat.* **33** : 119.

Incorrect subsequent spelling of *Thiotricha* Meyrick, 1886.

‡*THIOTRICA* Inoue, 1954, *Check List Lepid. Japan* **1** : 67.

Incorrect subsequent spelling of *Thiotricha* Meyrick, 1886.

THIOTRICHA Meyrick, 1886, *Trans. N.Z. Inst.* **18** : 162 [key], 164.

Type-species: ***Thiotricha thorybodes*** Meyrick, 1886, *ibid.*, **18** : 164, by subsequent designation: Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 292.

See also: *Reuttia* Hofmann, 1898; ‡*Thiothricha* Hartig, 1956; ‡*Thiotrica* Inoue, 1954.

THOLEROSTOLA Meyrick, 1917, *Trans. ent. Soc. Lond.* **1917** : 40.

Type-species: ***Tholerostola omphalopa*** Meyrick, 1917, *ibid.* **1917** : 40, by monotypy.

Currently considered to be a junior subjective synonym of *Evippe* Chambers, 1873 (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 19); erroneously placed as a valid genus by Clarke, 1969, *ibid.* **7** : 476.

THRIOPHORA Meyrick, 1911, *Ann. Transv. Mus.* **2** : 231.
Type-species: ***Thriophora ovulata*** Meyrick, 1911, *ibid.* **2** : 231, by monotypy.

‡*THRIPSIGENES* Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 20.
Incorrect subsequent spelling of *Thrypsigenes* Meyrick, 1914.

THRYPSIGENES Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 272.
Type-species: ***Thrypsigenes colluta*** Meyrick, 1914, *ibid.* **1914** : 272, by original designation.
See also: *Lioclepta* Meyrick, 1922; ‡*Thripsigenes* Clarke, 1955.

****THUBANA*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 814.
Type-species: ***Thubana bisignatella*** Walker, 1864, *ibid.* **29** : 814, by monotypy.
Placed as a junior subjective synonym of *Tiva* Walker, 1864 (Walker, 1864, *ibid.* **30** : 1038); however, *Thubana* Walker, 1864, is the senior name.
Originally described in the Gelechi[i]dae; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).
See also: *Inapha* Walker, 1864; *Tiva* Walker, 1864.

*‡*THYMBRISTIS* Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21.
Incorrect subsequent spelling of *Thymbritis* Meyrick, 1925.

****THYMBRITIS*** Meyrick, 1925, *Genera Insect.* **184** : 5 [key], 230.
Type-species: ***Onebala molybdias*** Meyrick, 1910, *J. Bombay nat. Hist. Soc.* **20** : 456, by original designation and monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).
See also: ‡*Thymbristis* Clarke, 1955.

****THYMIATRIS*** Meyrick, 1907, *J. Bombay nat. Hist. Soc.* **17** : 738.
Type-species: ***Thymiatris melitacma*** Meyrick, 1907, *ibid.* **17** : 738, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Cryptophasidae [= Xyloryctidae] (Fletcher, 1929, *Mem. Dep. Agric. India, Ent. Ser.* **11** : 222).

THYMOSOPHA Meyrick, 1914, *Ann. S. Afr. Mus.* **10** : 244.
Type-species: ***Thymosopha antileuca*** Meyrick, 1914, *ibid.* **10** : 245, by monotypy.

****THYROCOPA*** Meyrick, 1883, *Entomologist's mon. Mag.* **20** : 32.
Type-species: *Depressaria usitata* Butler sensu Meyrick, 1883 [= ***Thyrocopa abusa*** Walsingham, 1907, *Fauna hawaii.* **1**(5) : 504], by monotypy.
Incorrect type-species: *Depressaria usitata* Butler, 1881, *Ann. Mag. nat. Hist.* (5)**7** : 396, designated by Clarke, 1969, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **7** : 480. The identity of the type-species has been clarified by Walsingham, 1907, *Fauna hawaii.* **1**(5) : 492, 504, whose conclusions should be accepted.
Originally described in the Gelechi[i]dae; subsequently transferred to the Xyloryctidae (Meyrick, 1915, *Exot. Microlepidopt.* **1** : 370); erroneously included in the Gelechiidae by Clarke, 1969, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **7** : 480.
See also: *Catamempsis* Walsingham, 1907; *Psychra* Walsingham, 1907; *Synomotis* Meyrick, 1883.

THYRSOMNESTIS Meyrick, 1929, *Trans. ent. Soc. Lond.* **76** : 514.
Type-species: ***Thyrsomnestis ceramoxantha*** Meyrick, 1929, *ibid.* **76** : 514, by monotypy.
Originally described in the Xyloryctidae; subsequently included in the Stenomidae by Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **2** : 383, although he believed that *Thyrsomnestis* should be placed in the Gelechiidae; here transferred to the Gelechiidae (Hodges in litteris).

THYRSOSTOMA Meyrick, 1907, *J. Bombay nat. Hist. Soc.* **17** : 736.
Type-species: ***Thyrsostoma glaucitis*** Meyrick, 1907, *ibid.* **17** : 736, by monotypy.

TILA Povolný, 1965, *Acta ent. bohemoslovaca* **62** : 485.
Type-species: ***Lita capsophilella*** Chrétien, 1900, *Bull. Soc. ent. Fr.* **1900** : 223, by original designation and monotypy.

TILDENIA Povolný, 1967, *Acta ent. Mus. natn. Pragae* **37** : 101.
Type-species: ***Gelechia glochinella*** Zeller, 1873, *Verh. zool.-bot. Ges. Wien* **23** : 263, pl. 3, fig. 18, by original designation.

*****TIMYRA*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 782.
Type-species: ***Timyra phycisella*** Walker, 1864, *ibid.* **29** : 783, by monotypy.
Originally described in the Gelechi[i]dae; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).
See also: *Decuaria* Walker, 1864; *Uipsa* Walker, 1864.

*****TINGENTERA*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 798.
Type-species: ***Tingentera meliorella*** Walker, 1864, *ibid.* **29** : 798, by monotypy.
Originally described in the Gelechi[i]dae; currently considered to be a junior subjective synonym of *Tisis* Walker, 1864 (Meyrick, 1910, *Trans. ent. Soc. Lond.* **1910** : 437), which automatically places *Tingentera* Walker, 1864, in the Lecithoceridae.

TIPASA* Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29 : 804 (nom. praeocc.).
Type-species: *Tipasa basaliella* Walker, 1864, *ibid.* **29** : 805, by monotypy.
Tipasa Walker, 1864, is a junior homonym of *Tipasa* Walker, 1863 (Lepidoptera: Noctuidae); currently considered to be a junior subjective synonym of *Frisilia* Walker, 1864 (Meyrick, 1925, *Genera Insect.* **184** : 213). *T. basaliella* Walker, 1864, is currently considered to be a junior subjective synonym of *Frisilia nesciatella* Walker, 1864, the type-species of *Frisilia* Walker, 1864 (Meyrick, 1925, *Genera Insect.* **184** : 213).
Originally described in the Gelechi[i]dae; *Tipasa* Walker, 1864, automatically follows its senior synonym to the Lecithoceridae.

*****TIPHA*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 798.
Type-species: ***Tipha chalybaeella*** Walker, 1864, *ibid.* **29** : 799, by monotypy.
Originally described in the Gelechi[i]dae; currently considered to be a junior subjective synonym of *Tisis* Walker, 1864 (Meyrick, 1910, *Trans. ent. Soc. Lond.* **1910** : 437), which automatically places *Tipha* Walker, 1864, in the Lecithoceridae.

*****TIRALLIS*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 806.
Type-species: ***Tirallis latifasciella*** Walker, 1864, *ibid.* **29** : 806, by original designation.
Originally described in the Gelechi[i]dae; currently considered to be a junior subjective synonym of *Tisis* Walker, 1864 (Meyrick, 1910, *Trans. ent. Soc. Lond.* **1910** : 437), which automatically places *Tirallis* Walker, 1864, in the Lecithoceridae. *T. latifasciella* Walker, 1864, is currently considered to be a junior subjective synonym of *Tipha chalybaeella* Walker, 1864, the type-species of *Tipha* Walker, 1864 (Meyrick, 1925, *Genera Insect.* **184** : 204).

TIRANIMIA Chrétien, 1915, *Annls Soc. ent. Fr.* **84** : 334.
Type-species: ***Tiranimia epidolella*** Chrétien, 1915, *ibid.* **84** : 334, fig. 7, by monotypy.

TIRASIA* Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29 : 817 (nom. praeocc.).
Type-species: *Tirasia punctigeneralis* Walker, 1864, *ibid.* **29** : 818, by monotypy.
Tirasia Walker, 1864, is a junior homonym of *Tirasia* Walker, 1863 (Lepidoptera: Psychidae); currently considered to be a junior subjective synonym of *Lecithocera* Herrich-Schäffer, 1853 (Meyrick, 1925, *Genera Insect.* **184** : 237).
Originally described in the Gelechi[i]dae; *Tirasia* Walker, 1864, automatically follows its senior subjective synonym *Lecithocera* Herrich-Schäffer, 1853, to the Lecithoceridae.

***TIRIZA** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 790.
Type-species: ***Tiriza leucotella*** Walker, 1864, *ibid.* **29** : 791, by monotypy.
Originally described in the Gelechi[i]dae; currently considered to be a junior subjective synonym of *Lecithocera* Herrich-Schäffer, 1853 (Meyrick, 1925, *Genera Insect.* **184** : 237), which automatically places *Tiriza* Walker, 1864, in the Lecithoceridae.

***TISIS** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 793.
Type-species: ***Tisis bicolorella*** Walker, 1864, *ibid.* **29** : 793, by monotypy.
Originally described in the Gelechi[i]dae; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).
See also: *Cacogamia* Snellen, 1903; *Tingentera* Walker, 1864; *Tipha* Walker, 1864; *Tirallis* Walker, 1864; *Tonosa* Walker, 1864.

***TITANA** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 813.
Type-species: ***Titana adelella*** Walker, 1864, *ibid.* **29** : 814, by monotypy.
Originally described in the Gelechi[i]dae; currently considered to be a junior subjective synonym of *Lecithocera* Herrich-Schäffer, 1853 (Meyrick, 1925, *Genera Insect.* **184** : 237), which automatically places *Titana* Walker, 1864, in the Lecithoceridae.

TITUACIA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 812.
Type-species: ***Tituacia deviella*** Walker, 1864, *ibid.* **29** : 812, by monotypy.
See also: *Stomylia* Snellen, 1878.

***TIVA** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 821.
Type-species: ***Tiva binotella*** Walker, 1864, *ibid.* **29** : 822, by monotypy.
Originally described in the Gelechi[i]dae; currently considered to be a junior subjective synonym of *Thubana* Walker, 1864 (Walker, 1864, *ibid.* **30** : 1038), which automatically places *Tiva* Walker, 1864, in the Lecithoceridae. *T. binotella* Walker, 1864, is currently considered to be a junior subjective synonym of *Thubana bisignatella* Walker, 1864, the type-species of *Thubana* Walker, 1864 (Walker, 1864, *ibid.* **30** : 1038). Walker erroneously placed *Tiva* and *T. binotella* [erroneously cited as '*designatella*'] as the senior names.

TOCMIA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 805.
Type-species: ***Tocmia versicolorella*** Walker, 1864, *ibid.* **29** : 806, by monotypy.

TOGIA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 791.
Type-species: ***Togia nemophorella*** Walker, 1864, *ibid.* **29** : 792, by monotypy.

***TONOSA** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 796.
Type-species: ***Tonosa seclusella*** Walker, 1864, *ibid.* **29** : 796, by monotypy.
Originally described in the Gelechi[i]dae; currently considered to be a junior subjective synonym of *Tisis* Walker, 1864 (Meyrick, 1925, *Genera Insect.* **184** : 204), which automatically places *Tonosa* Walker, 1864, in the Lecithoceridae.

TORNODOXA Meyrick, 1921, *Exot. Microlepidopt.* **2** : 432.
Type-species: ***Tornodoxa tholochorda*** Meyrick, 1921, *ibid.* **2** : 432, by monotypy.

***TORODORA** Meyrick, 1894, *Trans. ent. Soc. Lond.* **1894** : 16.
Type-species: ***Torodora characteris*** Meyrick, 1894, *ibid.* **1894** : 16, by original designation.
Junior subjective synonym of *Brachmia* Hübner, [1825] (Meyrick, 1911, *J. Bombay nat. Hist. Soc.* **20** : 708); currently considered to be a valid genus (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).

TOSCA Heinrich, 1920, *Proc. U.S. natn. Mus.* **57** : 65.
Type-species: ***Tosca plutonella*** Heinrich, 1920, *ibid.* **57** : 68, figs, by original designation and monotypy.

TOXOCERAS Chrétien, 1915, *Annls Soc. ent. Fr.* **84** : 329.
Type-species: ***Toxoceras violacellum*** Chrétien, 1915, *ibid.* **84** : 330, fig. 5, by monotypy.
Currently considered to be a junior subjective synonym of *Megacraspedus* Zeller, 1839 (Meyrick, 1925, *Genera Insect.* **184** : 33).

TOXOTACMA Meyrick, 1929, *Exot. Microlepidopt.* **3** : 504.
Type-species: ***Toxotacma meditans*** Meyrick, 1929, *ibid.* **3** : 504, by monotypy.

TRACHYEDRA Meyrick, 1929, *Exot. Microlepidopt.* **3** : 497.
Type-species: ***Trachyedra xylomorpha*** Meyrick, 1929, *ibid.* **3** : 498, by monotypy.

‡*TRACHYPHILIA* Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 156.
Incorrect subsequent spelling of *Tachyptilia* Heinemann, 1870.

‡*TRACHYPTILIA* Le Marchand, 1947, *Revue fr. Lépidopt.* **11** : 156, 157.
Incorrect subsequent spelling of *Tachyptilia* Heinemann, 1870.

TRICEROPHORA Janse, 1958, *Moths S. Afr.* **6** : 64.
Type-species: ***Telphusa commaculata*** Meyrick, 1921, *Ann. Transv. Mus.* **8** : 69, by original designation and monotypy.

TRICHEMBOLA Meyrick, 1918, *Exot. Microlepidopt.* **2** : 115.
Type-species: ***Trichembola segnis*** Meyrick, 1918, *ibid.* **2** : 116, by original designation.

****TRICHOBOSCIS*** Meyrick, 1929, *Exot. Microlepidopt.* **3** : 526.
Type-species: ***Trichoboscis pansarista*** Meyrick, 1929, *ibid.* **3** : 526, by monotypy.
Originally described in the Gelechiadae [= Gelechiidae]; subsequently transferred to the Timyridae [= Lecithoceridae] (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 21).

TRICHOTAPHE Clemens, 1860, *Proc. Acad. nat. Sci. Philad.* **1860** : 166.
Type-species: ***Trichotaphe setosella*** Clemens, 1860, *ibid.* **1860** : 166, by subsequent designation: Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 89.
Currently considered to be a junior subjective synonym of *Dichomeris* Hübner, 1818 (Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 87).
See also: *Begoe* Chambers, 1872; ‡*Tricotaphe* Riley, 1891.

‡*TRICOTAPHE* Riley, 1891, *in* Smith, *List Lepid. boreal Am.* : 113, 114.
Incorrect subsequent spelling of *Trichotaphe* Clemens, 1860.

TRICYANAULA Meyrick, 1925, *Genera Insect.* **184** : 8 [key], 131.
Type-species: ***Strobisia aurantiaca*** Walsingham, 1887, *in* Moore, *Lepid. Ceylon* **3** : 518, pl. 209, fig. 6, by original designation.

TRICYPHISTIS Meyrick, 1934, *Exot. Microlepidopt.* **4** : 449.
Type-species: ***Tricyphistis cyanorma*** Meyrick, 1934, *ibid.* **4** : 449, by monotypy.

****TRIGONOPHYLLA*** Turner, 1919, *Proc. R. Soc. Qd* **31** : 170.
Type-species: ***Trigonophylla tarachodes*** Turner, 1919, *ibid.* **31** : 171, by monotypy.
Correct date of publication (1919, December 30th) taken from original wrapper.
Originally described in the Gelechianae [= Gelechiidae]; subsequently transferred to the Oecophoridae (Meyrick, 1922, *Genera Insect.* **180** : 67).

‡*TRIPANISMA* Chambers, 1878, *Bull. U.S. geol. geogr. Surv. Terr.* **4** : 166.
Incorrect subsequent spelling of *Trypanisma* Clemens, 1860.

TRITADELPHA Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 257 [key], 323.
Type-species: ***Tritadelpha microptila*** Meyrick, 1904, *ibid.* **29** : 323, by monotypy.

TRYCHNOPALPA Janse, 1958, *Moths S. Afr.* **6** : 36.
Type-species: ***Gelechia fornacaria*** Meyrick, 1913, *Ann. Transv. Mus.* **3** : 289, by original designation and monotypy.
Senior objective synonym of *Synthesiopalpa* Povolný, 1966.

TRYPANISMA Clemens, 1860, *Proc. Acad. nat. Sci. Philad.* **1860** : 168.

Type-species: ***Trypanisma prudens*** Clemens, 1860, *ibid.* **1860** : 168, by monotypy.

See also: ‡*Tripanisma* Chambers, 1878.

TRYPHEROGENES Meyrick, 1931, *Exot. Microlepidopt.* **4** : 76.

Type-species: ***Trypherogenes chrysodesma*** Meyrick, 1931, *ibid.* **4** : 76, by monotypy.

‡*TUCHYPTILIA* Kirby, 1871, *Zool. Rec.* (1870) **7** : 422; 523 [index].

Incorrect subsequent spelling of *Tachyptilia* Heinemann, 1870.

****TURATIA*** Amsel, 1942, *Veröff. dt. Kolon. u. Übersee-Mus. Bremen* **3** : 234.

Type-species: ***Holcopogon morettii*** Turati, 1926, *Atti Soc. ital. Sci. nat.* **65** : 70, fig. 38 [recte 33], by original designation and monotypy.

Originally described in the Scythrididae; subsequently transferred to the Holcopogonidae (Gozmány, 1967, *Acta zool. hung.* **13** : 278).

TUTA Kieffer & Jörgensen, 1910, *Zentbl. Bakt. ParasitKde* (2. Abt.) **27** : 363.

Type-species: ***Gnorimoschema*** **(*Tuta*)** ***atriplicella*** Kieffer & Jörgensen, 1910, *ibid.* **27** : 363, by monotypy.

Tuta and G. (*T.*) *atriplicella* originated from Strand but were used and unintentionally made nomenclaturally available by Kieffer & Jörgensen prior to their proposal and description by Strand, 1911, *Berl. ent. Z.* **55** : 169.

Originally proposed as a subgenus of *Gnorimoschema* Busck, 1900; currently considered to be a junior subjective synonym of *Gnorimoschema* Busck, 1900 (Meyrick, 1925, *Genera Insect.* **184** : 89).

****UIPSA*** Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 828.

Type-species: ***Uipsa perionella*** Walker, 1864, *ibid.* **29** : 828, by monotypy.

Originally described in the Gelechi[i]dae; currently considered to be a junior subjective synonym of *Timyra* Walker, 1864 (Moore, 1887, *Lepid. Ceylon* **3** : 521), which automatically places *Uipsa* Walker, 1864, in the Lecithoceridae. *U. perionella* Walker, 1864, is currently considered to be a junior subjective synonym of *Timyra phycisella* Walker, 1864, the type-species of *Timyra* Walker, 1864 (Moore, 1887, *Lepid. Ceylon* **3** : 522).

ULIARIA Dumont, 1921, *Bull. Soc. ent. Fr.* **1920** : 329.

Type-species: ***Anacampsis rasilella*** Herrich-Schäffer, 1854, *Syst. Bearb. Schmett. Eur.* **5** : 191 [key], 202; 1853, *ibid.* **5**, pl. 63, fig. 459 [non-binominal], by original designation and monotypy.

Correct date of publication (1921, January 24th) taken from distribution list on p. [354].

Incorrect type-species: *Uliaria rasilella* var. *insulella* Dumont, 1921, *Bull. Soc. ent. Fr.* **1920** : 330, fig. 1, designated by Meyrick, 1925, *Genera Insect.* **184** : 255, as '*U. insulella*, Dumont'. Dumont clearly cited *rasilella* as the type-species (*Int. Code zool. Nom.*, Article 68 (a)).

Senior objective synonym of *Gomphocrates* Meyrick, 1925.

UNCUSTRIODONTA Agenjo, 1952, *Fáunula lepid. almeriense* : 87.

Type-species: ***Mesophleps trinotella*** Herrich-Schäffer, 1856, *Neue Schmett. Eur. angrenzenden Ländern* **1** : 6, fig. 46, by original designation and monotypy.

UNTOMIA Busck, 1906, *Proc. U.S. natn. Mus.* **30** : 727.

Type-species: ***Untomia untomiella*** Busck, 1906, *ibid.* **30** : 727, fig. 5, by original designation and monotypy.

VADENIA Caradja, 1933, *Mitt. dt. ent. Ges.* **4** : 94 (objective replacement name for *Nevadia* Caradja, 1920, nom. praeocc.).

Type-species: ***Nevadia ribbeella*** Caradja, 1920, *Dt. ent. Z. Iris* **34** : 118, by monotypy of *Nevadia* Caradja, 1920.

VAZUGADA Walker, 1864, *List Specimens lepid. Insects Colln Br. Mus.* **29** : 803.

Type-species: ***Vazugada strigiplenella*** Walker, 1864, *ibid.* **29** : 803, by monotypy.

Placed as a junior subjective synonym of *Dichomeris* Hübner, 1818 (Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 87); considered to be a valid genus by subsequent authors. *V. strigiplenella* Walker, 1864, is currently considered to be a junior subjective synonym of *Psecadia abscessella* Walker, 1863, *List Specimens lepid. Insects Colln Br. Mus.* **28** : 536 (Meyrick, 1925, *Genera Insect.* **184** : 178).

VLADIMIREA Povolný, 1967, *Acta ent. Mus. natn. Pragae* **37** : 148.
Type-species: ***Vladimirea wiltshirei*** Povolný, 1967, *ibid.* **37** : 151, figs 1, 2, by original designation.

XANTHOCERA* Amsel, 1953, *Sb. ent. Odd. nár. Mus. Praze* **28 : 425 (nom. praeocc.).
Type-species: *Lecithocera luticostella* Turati, 1926, *Atti Soc. ital. Sci. nat.* **65** : 69, fig. 31, by monotypy.
Xanthocera Amsel, 1953, is a junior homonym of *Xanthocera* Townsend, 1915 (Diptera); *Xanthocerodes* Amsel, 1955, was proposed as the objective replacement name.
Originally described in the Gelechiidae; here transferred to the Lecithoceridae.
Correct date of publication (1953) taken from original wrapper.

****XANTHOCERODES*** Amsel, 1955, *Bull. Inst. r. Sci. nat. Belg.* **31**(83) : 60 (objective replacement name for *Xanthocera* Amsel, 1953, nom. praeocc.).
Type-species: ***Lecithocera luticostella*** Turati, 1926, *Atti Soc. ital. Sci. nat.* **65** : 69, fig. 31, by monotypy of *Xanthocera* Amsel, 1953.
Originally proposed in the Gelechiidae; here transferred to the Lecithoceridae.

XENOLECHIA Meyrick, 1895, *Handb. Br. Lepid.* : 583.
Type-species: ***Anacampsis aethiops*** Humphreys & Westwood, 1845, *Br. Moths Transformations* **2** : 192, pl. 107, fig. 13, by subsequent designation: Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 56.
Junior subjective synonym of *Telphusa* Chambers, 1872 (Busck, [1903], *in* Dyar, *Bull. U.S. natn. Mus.* **52** : 496); currently considered to be a valid genus (Pierce & Metcalfe, 1935, *Genitalia Tineid Families Lepid. Br. Islands* : 9). Used as the subjective replacement name for *Telphusa* Chambers, 1872, which was erroneously considered to be a junior homonym of ‡*Telphusa* Latreille, 1828 (Kloet & Hincks, 1945, *Check List Br. Insects* : 127).

****XENOPLAXA*** Gozmány, 1963, *Acta zool. hung.* **9** : 105.
Type-species: ***Xenoplaxa seraf*** Gozmány, 1963, *Acta zool. hung.* **9** : 106, figs 40, 41, by original designation and monotypy.
Originally described and currently placed in the Symmocidae.

XENORRHYTHMA Meyrick, 1926, *Sarawak Mus. J.* **3** : 154.
Type-species: ***Myrophila traumatias*** Meyrick, 1923, *Exot. Microlepidopt.* **2** : 625, by original designation and monotypy.

XEROMETRA Meyrick, 1925, *Genera Insect.* **184** : 18 [key], 170.
Type-species: ***Nothris crocina*** Meyrick, 1904, *Proc. Linn. Soc. N.S.W.* **29** : 421 [key], 423, by original designation.

****XYSTOCEROS*** Meyrick, 1914, *Exot. Microlepidopt.* **1** : 253.
Type-species: ***Xystoceros tripleura*** Meyrick, 1914, *ibid.* **1** : 253, by monotypy.
Currently considered to be a junior subjective synonym of *Apiletria* Lederer, 1855 (Gozmány, 1965, *Acta zool. hung.* **11** : 106).
Originally described in the Oecophoridae; subsequently included in the Blastobasidae (Clarke, 1955, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **1** : 23); currently placed in the Symmocidae (Gozmány, 1965, *Acta zool. hung.* **11** : 106). Erroneously placed in the Gelechiidae by Clarke, 1969, *Cat. Type Specimens Microlepid. Br. Mus. nat. Hist. descr. E. Meyrick* **7** : 524.

XYSTOPHORA Wocke, [1876], *in* Heinemann, *Schmett. Dtl. Schweiz* (2)**2**(2), Tabelle der Gattungen : 6 (objective replacement name for *Doryphora* Heinemann, 1870, nom. praeocc.).

Type-species: **Anacampsis pulveratella** Herrich-Schäffer, 1854, *Syst. Bearb. Schmett. Eur.* **5** : 199; 1853, *ibid.* **5**, pl. 73, fig. 552 [non-binominal], by subsequent designation: Walsingham, 1909, *Biologia cent. am., Zool.*, Lepid.-Heterocera **4** : 22.

Correct date of publication (1876, November) taken from Kirby, 1878, *Zool. Rec.* (1876) **13**, (Insecta): 187.

Xystophora has been erroneously attributed to Heinemann or Heinemann & Wocke by most authors. Wocke, in his 'Schlusswort' on pp. [v]–vi, gives a detailed account of his own contributions and those of Heinemann to 'Heft 2'. According to the statement on p. vi the 'Tabelle der Gattungen' must be attributed entirely to Wocke.

Junior subjective synonym of *Aristotelia* Hübner, [1825] (Walsingham, 1907, *Fauna hawaii.* **1**(5) : 478); currently considered to be a valid genus (Pierce & Metcalfe, 1935, *Genitalia Tineid Families Lepid. Br. Islands* : 5).

See also: *Doryphora* Heinemann, 1870; *Doryphorella* Cockerell, 1888; *Monochroa* Heinemann, 1870; ‡*Xytosphora* Pierce & Metcalfe, 1935.

‡*XYTOSPHORA* Pierce & Metcalfe, 1935, *Genitalia Tineid Families Lepid. Br. Islands* : 5.
Incorrect subsequent spelling of *Xystophora* Wocke, [1876].

****YPSOLOPHUS*** Fabricius, 1798, *Suppl. Ent. syst.* : 421, 505.
Type-species: **Phalaena (Tinea) sylvella** Linnaeus, 1767, *Syst. Nat.* (ed. 12) **1**(2) : 893, by subsequent designation: Desmarest, (1857), *in* Chenu, *Encycl. Hist. nat.*, Papillons nocturnes : 255.

Ypsolophus Fabricius, 1798, is currently placed in the Plutellidae. The name *Ypsolophus* has been used for species of Gelechiidae by Zeller, 1839, *Isis, Leipzig* **1839** : 189, and subsequent authors. Zeller's concept of *Ypsolophus* Fabricius, 1798, is erroneous because none of the species he included are congeneric with the type-species *Phalaena* (*Tinea*) *sylvella* Linnaeus, 1767.

See also: *Hypsolophus* Illiger, 1801.

‡*ZALITHEA* Janse, 1963, *Moths S. Afr.* **6** : 267.
Incorrect subsequent spelling of *Zalithia* Meyrick, 1894.

ZALITHIA Meyrick, 1894, *Trans. ent. Soc. Lond.* **1894** : 18.
Type-species: **Zalithia uranopis** Meyrick, 1894, *ibid.* **1894** : 18, by monotypy.

Meyrick, 1911, *J. Bombay nat. Hist. Soc.* **20** : 727, included *Zalithia uranopis* Meyrick, 1894, in *Strobisia* Clemens, 1860, thereby placing *Zalithia* Meyrick, 1894, as a junior subjective synonym of *Strobisia* Clemens, 1860. Currently considered to be a valid genus (Meyrick, 1914, *Trans. ent. Soc. Lond.* **1914** : 268).

See also: ‡*Zalithea* Janse, 1963.

ZELOSYNE Walsingham, 1911, *Biologia cent.-am., Zool.*, Lepid.-Heterocera **4** : 50.
Type-species: **Zelosyne poecilosoma** Walsingham, 1911, *ibid.* **4** : 51, fig. 13, pl. 2, fig. 11, by original designation and monotypy.

ZIMINIOLA Gerasimov, 1930, *Dt. ent. Z. Iris* **44** : 72.
Type-species: **Ziminiola gussakovskii** Gerasimov, 1930, *ibid.* **44** : 73, pl. 1, figs 1–7, by original designation and monotypy.

Currently considered to be a junior subjective synonym of *Rhynchopacha* Staudinger, 1871 (Sattler, 1968, *Dt. ent. Z.*, N.F. **15** : 111).

ZIZYPHIA Chrétien, 1908, *Bull. Soc. ent. Fr.* **1908** : 166.
Type-species: **Zizyphia cleodorella** Chrétien, 1908, *ibid.* **1908** : 167, by monotypy.

ZOMEUTIS Meyrick, 1913, *J. Bombay nat. Hist. Soc.* **22** : 182.
Type-species: **Zomeutis dicausta** Meyrick, 1913, *ibid.* **22** : 182, by monotypy.

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INDEX TO SPECIES

Each species is followed by the generic name with which it was originally combined; where necessary, a cross-reference is added to the generic name (or names) under which it appears in the Catalogue. As the genera are arranged alphabetically, no page references are considered neccessary.

abhaustella Chrétien, Aregha
abruptella Walker, Oecophora; Orthoptila
abscessella Walker, Psecadia; Vazugada
abusa Walsingham, Thyrocopa
abzacella Dumont, Hedma
acanthella Godart, Yponomeuta; Enolmis
acherusia Meyrick, Axyrostola
achroa Lower, Pycnobathra
achroea Walsingham, Logisis
acrochlora Meyrick, Hypelictis
acrophylla Meyrick, Telphusa; Syncopacma
acroxantha Lower, Dorycnopa
acuminata Walsingham, Untomia; Copticostola
acycla Diakonoff, Hypodrasia
adamantina Meyrick, Cnaphostola
adela Common, Macracaena
adelella Walker, Titana
adempta Braun, Elachista; Neaera
adustipennis Walsingham, Lathontogenus
aegidopis Meyrick, Phrixocrita
aegrella Walsingham, Symmoca; Thanatovena
aenictopa Meyrick, Syngenomictis
aestuosa Meyrick, Homaloxestis; Cymatoplex; Cymatoplicella
aethiops Humphreys & Westwood, Anacampsis; Xenolechia
aganactes Meyrick, Chelophoba
agnatella Walker, Gelechia; Chlorolychnis
agyrtodes Meyrick, Idioptila
alacella Zeller, Gelechia; Acanthophila
albella Amsel, Eremica; Pecteneremus
albella Chambers, Laverna; Neaera
albella Chambers, Phigalia; Neaera
albiceps Zeller, Gelechia (Brachmia); Parachronistis
albidella Chrétien, Sicera
albidella Rebel, Epidola; Tenieta
albiflora Meyrick, Gelechia; Araeovalva; Stenovalva Janse
albinervella Kieffer & Jörgensen, Fapua
albisparsella Chambers, Depressaria; Cirrha
alexandriacella Chambers, Adrasteia; Adrastia
alloea Walsingham, Oestomorpha
alphitodes Meyrick, Calyptrotis
alternella Walker, Andusia
alveola Felder & Rogenhofer, Cryptolechia; Thalamarchis
ametris Meyrick, Gelechia; Haplovalva
amnesta Meyrick, Neocorodes
amorpha Meyrick, Ereboscaeas
amphicarpa Meyrick, Canthonistis
amphizeucta Meyrick, Lachnostola
ampycota Meyrick, Holaxyra
amseli Gozmány, Bubulcellodes; Gigantoletria
amseli Gozmány, Gigantoletria
amseli Povolný, Vladimirea; Distinxia
amselina Gozmány, Gigantoletria
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anaphracta Meyrick, Paradoris; Kertomesis
andropogonis Braun, Stereomita
angulata Janse, Anastomopteryx
angustipennis Rebel, Pseudosymmoca
angustipennis Rebel, Symmoca; Acrosyntaxis
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anthyllidella Hübner, Tinea; Aproaerema; Schuetzeia
antileuca Meyrick, Thymosopha
antisphena Meyrick, Pseudocrates
aoropis Meyrick, Latrologa
apatela Walsingham, Hodegia
apicepuncta Busck, Psoricoptera; Semophylax
apicitripunctella Clemens, Evagora
approbata Meyrick, Cerostoma; Pycnopogon
arcanella Busck, Dolidiria
ardua Meyrick, Onebala; Epharmonia
argentea Busck, Pavolechia; Desmaucha
argyracta Meyrick, Hapalonoma
astrapaea Meyrick, Chaliniastis
atelarga Meyrick, Autodectis
atrella Denis & Schiffermüller, Tinea; Eulamprotes; Lamprotes
atripalpis Meyrick, Aphanostola
atriplicella Kieffer & Jörgensen, Gnorimoschema; Tuta
atrupictella Dietz, Eucordylea
attonita Meyrick, Oxycryptis
attributella Walker, Gelechia; Taygete
audax Walsingham, Glyphidocera
aulodocha Meyrick, Crocanthes; Sphenocrates

aulorrhoa Meyrick, Phthorimaea; Magnifacia
aurantiaca Walsingham, Strobisia; Tricyanaula
auriciliella Busck, Fortinea
auritogata Walsingham, Noeza; Neochrista
automorpha Meyrick, Syrmadaula

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balanitis Meyrick, Idiocrates
barathrodes Meyrick, Paristhmia
barbata Walsingham, Cyrnia
barberella Busck, Neodactylota; Eudactylota
barbertonensis Janse, Araeophalla
barymochla Meyrick, Desmophylax
barysphena Meyrick, Crossobela
basaliella Walker, Tipasa
bianulella Chambers, Oeseis
bicolorella Meyrick, Agnippe
bicolorella Walker, Tisis
bicristata Meyrick, Leptogeneia
bifasciella Chambers, Theisoa
bifida Keifer, Argyrolacia
bifidella Dietz, Nealyda
bifissa Meyrick, Stibarenches
bifractella Duponchel, Lita; Apodia
bilobella Zeller, Gelechia; Malacotricha
binotella Walker, Tiva
bipunctella Busck, Numata
bipunctella Rebel, Epidiopteryx
biscolorella Chambers, Agnippe
bisignatella Walker, Thubana; Inapha; Tiva
bivittella Chrétien, Anacampsis; Kahelia
blanda Janse, Rotundivalva
blanda Meyrick, Phthoracma
blandiella Walker, Onebala
blandulella Walker, Ficulea
† borisjaki Kusnezov, † Oegoconiites
brachypogon Meyrick, Megacraspedus; Microcraspedus
brachyptera Walsingham, Ambloma
brachysticha Turner, Pauroneura
brizella Treitschke, Oecophora; Ergatis
brochias Meyrick, Tipha; Doxogenes
brunneus Busck, Prostomeus
bubulcellus Staudinger, Hypsolophus; Cyrnia; Holcopogon
busckella Ely, Ptycerata
butyraula Meyrick, Idiophantis; Parabola
butyropa Meyrick, Onebala; Hyperochtha

caeca Meyrick, Machlotricha
caelata Meyrick, Telphusa; Furcaphora
callichroa Meyrick, Diocosma
calycopa Meyrick, Anastreblotis
candida Stainton, Anarsia; Dactylethra
capsophilella Chrétien, Lita; Tila
capsulifex Kieffer & Jörgensen, Dicranoses
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carnicolor Walsingham, Orygocera
carpaea Meyrick, Psammoris
carycina Meyrick, Trichotaphe; Myrophila
cassiaella Jörgensen, Bruchiana
castrigera Meyrick, Telphusa; Neotelphusa
catagrapha Meyrick, Encentrotis
catalinella Busck, Gelechia; Epilechia
catericta Meyrick, Gnosimacha
catharosema Meyrick, Stagmaturgis
caustonota Meyrick, Trichotaphe; Cotyloscia
cedestiella Zeller, Symmoca; Eremicamima
celidota Janse, Capnosema
centrophora Meyrick, Plectrocosma
centrotypa Meyrick, Melitoxestis
cephalochra Meyrick, Pachnistis
ceramoxantha Meyrick, Thyrsomnestis
cercerisella Chambers, Depressaria; Fascista
cerealella Olivier, Alucita; Sitotroga
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characopa Meyrick, Organitis
characteris Meyrick, Torodora
chariphila Meyrick, Pithanurga
chartaria Meyrick, Trichotaphe; Mythographa
cheramopis Meyrick, Telephata
chernetis Meyrick, Epicoenia
cherregella Chrétien, Phloeocecis
chersaea Meyrick, Ephysteris
chersopsamma Meyrick, Charadraula; Bubulcellodes
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chionocephala Lower, Stenopherna
chlorophthalma Meyrick, Metabolaea
chlorotoma Meyrick, Leuronoma
chlorotricha Meyrick, Corthyntis
choristis Meyrick, Dectobathra
chrematistis Meyrick, Sphaerolbia
chretieni Turati, Microlechia
chromatica Meyrick, Chaliniastis; Apocritica
chrysocosma Meyrick, Magonympha
chrysodesma Meyrick, Trypherogenes
chrysostoma Meyrick, Desmaucha
chthoniopa Meyrick, Asbolistis; Exorgana

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cinerella Clerck, Phalaena; Acompsia; Brachycrossata
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cirrhocrena Meyrick, Hypochasmia
cirrhopa Meyrick, Proteodoxa
citraulax Meyrick, Nematochares
citriella Chambers, Coleotechnites
clavicularis Meyrick, Glycerophthora
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cleodorella Chrétien, Zizyphia
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cockerelli Busck, Gelechia; Friseria
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coelatella Walker, Gasmara
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colluellum Chrétien, Nastoceras; Nastocerella
colluta Meyrick, Thrypsigenes
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compsotoma Meyrick, Commatica; Excommatica
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confirmata Meyrick, Oxylechia
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conscripta Haworth, Chelaria
conscriptella Hübner, Tinea; Chelaria; Hypatima
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cophias Meyrick, Gelechia; Melitoxoides
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coryliella Chambers, Hyale
cosmocrossa Meyrick, Acrophiletis
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crauropa Meyrick, Istrianis
crenoides Meyrick, Hyodectis
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cristifasciella Chambers, Gelechia; Arogalea
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crotalariella Busck, Lipatia
cryphias Meyrick, Symbatica
cryphiodes Meyrick, Harpagandra
cryptogamarum Millière, Oecophora; Aprominta
crystallista Meyrick, Epiphthora; Anapatetris
csornensis Rebel, Catabrachmia
cucullata Meyrick, Lecithocera; Asmenistis
curvistrigella Chambers, Telphusa
cyanocorys Meyrick, Sclerophantis
cyanopa Meyrick, Anaxyrina
cyanoplaca Meyrick, Ptilosticha
cyanorma Meyrick, Tricyphistis
cyanosceptra Meyrick, Crypsimaga
cyanoschista Meyrick, Lysipatha
cyclonitis Meyrick, Styloceros
cyprophanes Meyrick, Daemonarcha
cytisella Curtis, Cleodora; Cleodora auct.; Paltodora

decapitata Meyrick, Iphimachaera
decedens Walsingham, Sceptea
decipiens Walsingham, Catamempsis
decorella Haworth, Tinea; Carpatolechia
decurtella Hübner, Tinea; Aristotelia
decusella Walker, Gaesa
delicatella Walsingham, Symmoca; Neospastus
designatella Walker, Tiva
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detersella Zeller, Gelechia; Stomopteryx
deviella Walker, Tituacia; Stomylia
diacma Meyrick, Tipha; Oxygnostis
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difficilisella Chambers, Evagora; Taygete
diffinis Haworth, Recurvaria; Teleiopsis
dilechria Turner, Corynaea
dilucescens Meyrick, Coniogyra
dimidiella Denis & Schiffermüller, Tinea; Brachmia; Cladodes; Eudodacles
diortha Meyrick, Anacampsis; Compsolechia
discissa Meyrick, Chelaria; Episacta
discontinuella Rebel, Gelechia; Klimeschiopsis
discopuncta Janse, Isotypa
dissectella Zeller, Enchrysa
dissonella Walker, Patouissa
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elaeoxyla Meyrick, Lasiarchis
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eremna Meyrick, Commatica
ergasima Meyrick, Phthorimaea; Ergasiola
eridora Meyrick, Sarotorna
eriocrossa Meyrick, Clepsimacha; Cratinitis
erista Meyrick, Protobathra
erosella Snellen, Stomylia
erratica Meyrick, Nosphistica
erythrogramma Meyrick, Hierangela
eucharacta Meyrick, Stomopteryx; Harpograptis
euchroa Lower, Atasthalistis; Croesopola
euopa Turner, Oncerozancla
eupatris Meyrick, Lecithocera; Habrogenes
euplecta Meyrick, Cymatomorpha
eurybatis Meyrick, Macrenches
eurynotus Walsingham, Pappophorus
euthetodes Meyrick, Syncratomorpha
exoema Meyrick, Pachnistis; Stelechoris
exstans Meyrick, Calamotypa
extranea Walsingham, Poecilia; Geniadophora

factiosa Meyrick, Phatnotis
faecivorella Chrétien, Hypersymmoca
fagoniae Meyrick, Phloeocecis
fagoniae Walsingham, Leobatus
falcatella Walker, Gelechia; Apopira
fallax Diakonoff, Diprotochaeta
fallax Mann, Chilopselaphus
farinata Meyrick, Epithectis; Parathectis
fasciata Stainton, Gelechia; Apatema
fasciella Chrétien, Batenia
fascinata Durrant, Diascepsis
festa Meyrick, Iochares
fibularis Meyrick, Onebala; Prosodarma
flabellifer Rebel, Nothris; Dolerotricha
flagitiosa Meyrick, Homaloxestis; Carodista
flammella Hübner, Carcina; Helina
flaviterminella Walsingham, Merimnetria
foeldvarii Gozmány, Ilionarsis
formosella Denis & Schiffermüller, Tinea; Helina
formosella Hübner, Tinea; Helina
fornacaria Meyrick, Gelechia; Synthesiopalpa; Trychnopalpa
forsteri Gozmány, Megasymmoca
fracticostella Walsingham, Anorthosia; Prasodryas
fruticosella Walsingham, Pragmatodes
fulmenella Busck, Gelechia; Sriferia
fulminella Millière, Gelechia; Sriferia
fulvidella Walsingham, Brachmia; Schistonoea
fuscocristatella Chambers, Naera; Leuce
fuscopalidella Chambers, Sinoe
fuscotaeniaella Chambers, Gelechia; Rifseria

gaditella Staudinger, Gelechia; Anaphaula
gaesata Meyrick, Inotica
galactopa Meyrick, Lexiarcha
gallaesolidaginis Riley, Gelechia; Gnorimoschema
gamma Diakonoff, Neolechia
gemmella Linnaeus, Phalaena (Tinea); Poecilia; Stenolechia
generosa Meyrick, Aeolotrocha
geniatella Busck, Gelechia; Anthistarcha

geodes Meyrick, Bucolarcha
geranoptera Meyrick, Scaeostrepta
ghorella Amsel, Stenovalva Amsel
gibbosella Zeller, Gelechia (Chelaria); Psoricoptera
gibsonella Kearfott, Recurvaria; Pulicalvaria
glaucitis Meyrick, Thyrsostoma
glebicolorella Snellen, Coproptilia
glochinella Zeller, Gelechia; Tildenia
glycinopis Meyrick, Eunomarcha; Atoponeura
gnomonodes Meyrick, Epicharta
gossypiella Saunders, Depressaria; Pectinophora
gracilella Chambers, Sagaritis
gradata Meyrick, Brachmia; Schemataspis
grisea Filipjev, Reichardtiella
griseobrunnea Janse, Metatactis
griseoptera Janse, Paratelphusa
griseotincta Janse, Cerofrontia
grossa Povolný, Scrobipalpa; Euscrobipalpa
gussakovskii Gerasimov, Ziminiola
guttella Hübner, Tinea; Microsetia
guyonella Guenée, Oecocecis
gypsella Constant, Doryphora; Caulastrocecis

habrias Meyrick, Idiophantis
halimilignella Walsingham, Proactica
haplopa Janse, Deltolophos
heliapta Meyrick, Macrernis
helicopis Meyrick, Strobisia; Parelectra; Parelectroides
heliochares Lower, Gelechia; Dorycnopa
heliochra Meyrick, Sclerocopa
heliopa Lower, Gelechia; Scrobipalpa
heliosema Diakonoff, Euhomalocera
helveolellus Staudinger, Holcopogon
hemiacma Meyrick, Lecithocera; Brachyerga
hemichlaena Lower, Gelechia; Epibrontis
hemizancla Janse, Allophlebia
heptagramma Meyrick, Scythostola
heringi Gozmány, Iwaruna
hermannella Fabricius, Tinea; Chrysia; Chrysoesthia
herpestica Meyrick, Peucoteles
hetaera Meyrick, Ptocheuusa; Symphanactis
heteractis Meyrick, Anterethista
heterogastra Meyrick, Sterrhostoma
hibisci Stainton, Gelechia; Helcystogramma
hippastis Meyrick, Timyra; Monerista
hippica Meyrick, Palintropa
hobohmi Janse, Euryctista
holophaea Turner, Liozancla
homalodoxa Meyrick, Asarista
homogenes Turner, Syndesmica
hoplodoxa Meyrick, Chalcomima
horogramma Meyrick, Nesolechia; Syngenomictis
humilis Turner, Leurozancla
huri Gozmány, Hieronala
hutchinsonella Walsingham, Gelechia; Aspasiodes
hydrosema Meyrick, Timyra; Olbothrepta
hylotropha Janse, Angustiphylla
hyptiota Meyrick, Strenophila

ichnota Meyrick, Battaristis
ichorodes Meyrick, Lecithocera; Periphorectis
idiospila Meyrick, Semocharista
ignobilis Turner, Idiozancla; Phobetica
illustrella Hübner, Tinea; Sophronia
imposita Meyrick, Gambrostola
incertella Herrich-Schäffer, Anacampsis; Epiparasia
inconspicua Janse, Clepsimorpha
incredibilis Povolný, Agonochaetia
infernalis Herrich-Schäffer, Gelechia; Neofaculta
infernella Herrich-Schäffer, Gelechia; Neofaculta
indefessa Meyrick, Proadamas
inopella Zeller, Gelechia (Brachmia); Ptocheuusa; Syneunetis
inopina Meyrick, Achoria
inquinata Meyrick, Lophaeola
insipiens Meyrick, Empedaula
insomnis Meyrick, Colobodes
insulella Dumont, Uliaria
interguttella Walker, Coydalla
inumbrata Meyrick, Anacampsis; Octonodula
inustella Herrich-Schäffer, Gelechia; Opacopsis
inversella Zeller, Epicorthylis
ioloncha Meyrick, Paraspistes
iophaea Meyrick, Arotria
irakella Amsel, Bagdadia
iranica Gozmány, Exorgana
iriarcha Meyrick, Coconympha
iridea Forbes, Glaucacna
iridipennella Clemens, Strobisia

ischnoptila Turner, Idiobela
isocola Meyrick, Crocogma; Demopractis
isocosma Meyrick, Anaptilora
isomorpha Meyrick, Pedioxestis
ithyxyla Meyrick, Iulota

jeanae Philpott, Kiwaia
joannisiella Ragonot, Paranarsia
jordanella Rebel, Oxypteryx
josianella Walker, Gonaepa
junctivittella Christoph, Metanarsia; Parametanarsia
justa Meyrick, Onebala; Abrachmia

kalahariensis Janse, Pelostola
kalifella Amsel, Symmoca; Kullashara
karachiella Amsel, Abrachmia
kaszabi Gozmány, Gobiletria
kautziella Rebel, Symmoca; Catasphalma
kiefferi Kieffer & Jörgensen, Tecia; Lata
kinkerella Snellen, Dactylota; Dactylotula; Didactylota
klotsi Povolný, Gnorimoschema; Neoschema
knysnaensis Janse, Phanerophalla
kollarella Costa, Tinea; Euteles; Paradoris
kyra Gozmány, Hecestoptera

lactaria Meyrick, Alsodryas
lacticaudellum Walsingham, Drepanoterma
lampetis Meyrick, Heliangara
lampronialis Walker, Inapha
lanceolata Diakonoff, Emmetrophysis
lappella Linnaeus, Phalaena (Tinea); Cleodora; Paltodora
latescens Walsingham, Paranoea
lathridia Meyrick, Telphusa; Allotelphusa
lathyri Stainton, Gelechia; Epithectis
latifasciella Walker, Tirallis
latiusculella Stainton, Hypatima; Parasymmoca; Symmoletria
laurocistella Chrétien, Schistophila
leptoglypta Meyrick, Sarisophora
leucatella Clerck, Phalaena; Aphanaula; Telea
leucella Amsel, Chionella; Chionellidea
leucochalca Meyrick, Semnostoma
leucogaea Meyrick, Apatetris; Curvisignella
leucomelanella Zeller, Gelechia; Caryocolum
leuconota Zeller, Gelechia (Teleia); Phaetusa
leucopleura Meyrick, Teuchophanes
leucostictus Walsingham, Apotistatus
leucostola Meyrick, Protobathra; Scythropiodes
leucotella Walker, Tiriza
leucura Walsingham, Systasiota
leurodes Turner, Loboptila
lignivora Butler, Scardia; Diplosara
ligulella Hübner, Dichomeris; Chaetochilus; Elasmion
limita Turner, Scindalmota
lindenella Busck, Gelechia; Friseria
lineatella Zeller, Anarsia; Ananarsia
lingulacella Clemens, Nomia; Chrysopora
lithochroma Busck, Promenesta
lithochroma Walsingham, Eremica; Leilaptera
lithosema Meyrick, Bactropaltis
lonchoptera Staudinger, Atremaea
longifasciella Clemens, Gelechia; Telphusa
longinqua Meyrick, Stiphrostola
longitudinella Busck, Besciva
longivitella Rebel, Epiparasia
lophozancla Janse, Amblyphylla
loxodesma Meyrick, Prodosiarcha
lucernata Meyrick, Lecithocera; Leviptera
luctificella Hübner, Tinea; Chionodes
luella Lederer, Apiletria
lugubrella Fabricius, Tinea; Chionodes
lusoria Meyrick, Brachmia; Sphagiocrates
luteostrigella Chambers, Polyhymno
luticornella Zeller, Carcina; Lecithocera
luticostella Turati, Lecithocera; Xanthocera; Xanthocerodes
lutilabrella Mann, Gelechia; Lutilabria
lycopersicella Busck, Phthorimaea; Keiferia
lycopersicella Walsingham, Eucatoptus; Keiferia
lygrodes Meyrick, Petalostoma; Petalostomella

macrynta Meyrick, Phloegraptis
maculata Walsingham, Lecithocera; Protolychnis
maculata Walsingham, Oecia; Macroceras
maculatella Hübner, Tinea; Mirificarma
maculicostella Kieffer & Jörgensen, Cecidolechia
magnetella Staudinger, Gelechia; Harpagidia
malachias Meyrick, Trichotaphe; Sathrogenes
malacodes Meyrick, Nothris; Acribologa
malthacopa Meyrick, Taphrosaris

marginata Walsingham, Brachycrossata; Orsodytis
marthae Gozmány, Hamartema
martialis Meyrick, Athymoris
maturata Meyrick, Eporgastis
mauricaudella Oberthür, Tachyptilia; Glaphyrerga
mediopallidum Walsingham, Apatema
meditans Meyrick, Toxotacma
melanchlaena Turner, Aproopta
melanocampta Meyrick, Phthorimaea; Eurysacca
melanombra Meyrick, Epiphthora
melanophylla Turner, Euryzancla
meledanthis Meyrick, Clerogenes
meliorella Walker, Tingentera
melitacma Meyrick, Thymiatris
mendica Turner, Macrozancla
mendicella Walker, Decuaria
mendozella Kieffer & Jörgensen, Tecia
mercuriata Gozmány, Eremicamura
meryntis Meyrick, Tingentera; Phanoschista
mesochra Lower, Gelechia; Protolechia
metachalca Meyrick, Thiognatha
metoeca Meyrick, Apethistis
metorcha Meyrick, Encolapta
meyricki Gerasimov, Nestorellus
micella Denis & Schiffermüller, Tinea; Argolamprotes
micradelpha Lower, Gelechia; Megalocypha
micradelpha Walsingham, Gelechia; Megalocypha
micranthis Meyrick, Synactias
microcasis Meyrick, Phthorimaea; Megalocypha
microphanta Meyrick, Pachnistis; Neopachnistis
microptila Meyrick, Tritadelpha
miltophragma Meyrick, Dichomeris; Cymotricha
mirabella Staudinger, Apatetris
miranda Clarke, Pseudarla
modesta Staudinger, Metanarsia
molybdantha Meyrick, Tingentera; Alciphanes
molybdias Meyrick, Onebala; Thymbritis
mongolica Gozmány, Cornusymmoca
monotona Amsel, Rhipidocera
morettii Turati, Holcopogon
moritzella Treitschke, Oecophora; Cosmardia
morizella Geyer, Tinea; Cosmardia
munda Janse, Acutitornus
mundana Meyrick, Chelaria; Haplochela
mutabilis Meyrick, Dissoptila

nana Haworth, Recurvaria
nanella Denis & Schiffermüller, Tinea; Hinnebergia; Recurvaria
nemophorella Walker, Togia
neochalca Meyrick, Ephelictis
neolecta Meyrick, Pholeutis; Elachypteryx
neopetrella Keifer, Gnorimoschema; Exceptia
nesciatella Walker, Frisilia; Tipasa
neuropterella Zeller, Gelechia (Metzneria); Parasia
nigribasis Janse, Leucophylla
nigriceps Matsumura, Holcophoroides
nigripuncta Janse, Belovalva
niveisignella Zeller, Psoricoptera; Parastega
nonstrigella Chambers, Dasycera; Thelyasceta
notaula Meyrick, Ilarches
nothriforme Walsingham, Epicharma
nundinella Zeller, Gelechia; Frumenta

obliquata Matsumura, Oegoconiodes
obliquella Walsingham, Cryptolechia; Idiopteryx
obliterata Walsingham, Symmoca; Orpecovalva
obruta Meyrick, Gelechia; Ptychovalva
obseratella Zeller, Gelechia; Helcystogramma
obtusipalpis Walsingham, Aponoea
ochrinotata Janse, Platyphalla
ochrofasciella Toll, Aproaerema; Lixodessa
ochrosidera Meyrick, Sisyrodonta
ocreata Meyrick, Onebala; Deltoplastis
oecophila Staudinger, Macroceras; Oecia
oenosema Meyrick, Eustalodes
olivierella Ragonot, Amblypalpis
olympi Gozmány, Amselina
omphalopa Meyrick, Tholerostola
operculella Zeller, Gelechia (Bryotropha); Phthorimaea
operosa Meyrick, Paltodora; Pyncostola
ophitis Walsingham, Simoneura
orophota Meyrick, Symbolistis
orthacma Meyrick, Dichomeris; Picroptera
orthodesma Lower, Bactrolopha
orthomeris Meyrick, Colpomorpha
osseella Stainton, Gelechia; Psamathocrita
ovulata Meyrick, Thriophora

oxybiella Millière, Symmoca; Symmocoides
oxycedrella Millière, Gelechia; Chretienia
oxylitha Meyrick, Heteroderces
oxyspila Meyrick, Anacampsis; Syncopacma
oxytypa Meyrick, Sclerograptis

pachysticta Meyrick, Semnolocha
palaearctica Povolný, Empista
paleata Ghesquière, Paltoloma
pales Gozmány, Pantacordis
pallidibasella Ragonot, Harpagidia
pallidigrisea Janse, Streyella
pallidochrella Chambers, Helice; Cacelice
palpigera Walsingham, Gelechia; Lathontogenus; Lipatia; Paraspistes
paltobola Meyrick, Thiotricha; Blastovalva
palustrellus Douglas, Ypsolophus; Catabrachmia
pancala Turner, Aprosoesta
pandora Meyrick, Plocamosaris
pannonicus Gozmány, Donaspastus
panochra Janse, Lanceoptera
pansarista Meyrick, Trichoboscis
paradesma Meyrick, Isochasta
paraplutella Busck, Gelechia; Aroga
parcella Lederer, Hapsifera; Bubulcellodes; Charadraula
paucipunctella Zeller, Gelechia; Metzneria
pectenalaeella Chambers, Glauce
peliella Treitschke, Lita; Neofriseria
pelochroa Janse, Paraselotis
pelodes Meyrick, Automola; Autosticha
peloptila Meyrick, Agriastis
peltosema Lower, Xenolechia; Deltophora
penessa Meyrick, Epistomotis
penicillata Walsingham, Eucatoptus
pennsylvanica Dietz, Pseudochelaria
pentagramma Meyrick, Calliprora
peracuta Meyrick, Megacraspedus; Ischnocraspedus
peragrata Meyrick, Crasimorpha
perionella Walker, Uipsa
periphora Meyrick, Pancoenia
permagna Meyrick, Compsolechia; Erikssonella
permolestella Busck, Cacelice
perobscurata Gozmány, Symmoca; Conquassata
perspersella Wocke, Gelechia; Altenia
petasitis Pfaffenzeller, Gelechia; Scrobipalpopsis
peterseni Povolný, Ilseopsis
petulans Meyrick, Hapalosaris
phaeocrossis Meyrick, Eridachtha; Atrichozancla
phaeostrota Meyrick, Rhynchotona
pharetrata Meyrick, Tipha; Mnesteria
phormophora Meyrick, Cyrictodes
phoxopterella Snellen, Ceratophora; Aulidiotis
phthoneropa Meyrick, Homaloxestis; Carterica; Cartericella
phycidiformis Walsingham, Psychra
phycisella Walker, Timyra; Uipsa
picolella Busck, Beltheca
picrocarpa Meyrick, Carbatina
picrodora Meyrick, Lecithocera; Plagiocrossa
picryntis Meyrick, Enthetica
pictella Zeller, Gelechia (Brachmia); Argyritis
pinguinella Treitschke, Haemylis; Guenea
pinifoliella Chambers, Gelechia; Paralechia
piperatella Zeller, Cryptolechia; Durrantia
pistaciella Weber, Schneidereria
plaesiodes Meyrick, Pachnistis; Parallactis
plaesiosema Turner, Phthorimaea; Symmetrischema
platyaula Meyrick, Crambodoxa
platyconta Meyrick, Macrotona; Narthecoceros
platyleuca Lower, Gelechia; Sphaleractis
plectanopa Meyrick, Colonanthes
pleurophaea Turner, Eurysara
pleurotella Walsingham, Aerotypia
plexigramma Meyrick, Dichomeris; Brochometis
plicata Walsingham, Ptilostonychia
plutella Chambers, Neda; Autoneda
plutella Chambers, Phaetusa
plutelliformis Snellen, Ceratophora; Myconita
plutelliformis Staudinger, Gelechia; Ornativalva
plutonella Heinrich, Tosca
poecilosoma Walsingham, Zelosyne
poenicea Turner, Brachyzancla
pogonias Meyrick, Onebala; Cynicostola
polioptera Janse, Megalocypha
politica Meyrick, Arotromima
pometella Harris, Rhinosia; Chaetochilus
populella Clerck, Phalaena; Anacampsis; Tachyptilia
porphyroloma Lower, Gelechia; Epimimastis
potosi Busck, Metopleura

praeditella Rebel, Lampros (Oecophora); Nukusa
praetexta Clarke, Darlia
pragmatica Meyrick, Craspedotis
prasinantha Meyrick, Porpodryas
prasinopis Meyrick, Crocanthes
proaula Meyrick, Dragmatucha
probata Meyrick, Telphusa; Klaussattleria; Pseudotelphusa; Sattleria Căpuşe
prochalina Meyrick, Photodotis
prographa Meyrick, Panicotricha
prograpta Meyrick, Pilocrates
prolocha Meyrick, Eridachtha
promptella Staudinger, Gelechia; Ephysteris
prorepta Meyrick, Gelechia; Sriferia
prosectris Meyrick, Ethmiopsis
prudens Clemens, Trypanisma
prunifoliella Chambers, Evippe
psaphara Meyrick, Demiophila
pseudogaleotis Janse, Lanceopenna
psilella Herrich-Schäffer, Gelechia; Scrobipalpula
psilodoxa Meyrick, Stachyostoma
psimythota Meyrick, Gelechia; Syngelechia
ptyoptera Meyrick, Anisoplaca
pubescentella Stainton, Gelechia; Epidiopteryx
pudorina Wocke, Gelechia; Deuterogonia; Gonia
pulcherrimella Walker, Siovata
pulveratella Herrich-Schäffer, Anacampsis; Doryphora; Doryphorella; Xystophora
pulverosella Chrétien, Sclerocecis
punctatella Walker, Rhobonda; Carna
punctigeneralis Walker, Tirasia
punctipennella Clemens, Anorthosia; Sagaritis
punctivittellus Zerny, Holcopogon; Arragonia
purpurata Diakonoff, Homotima
purpurea Walsingham, Ptilothyris
pycnodes Meyrick, Nothris; Lasiarchis
pycnostoma Meyrick, Spermanthrax
pyretodes Meyrick, Noeza; Semiomeris
pyrocosma Meyrick, Atasthalistis
pyrrhopis Meyrick, Prophoraula

quadrifariella Mann, Oecophora; Telephirca
quadripuncta Haworth, Recurvaria; Oecogenia; Oecogonia; Oegoconia

rasilella Herrich-Schäffer, Anacampsis; Gomphocrates; Uliaria
ratella Herrich-Schäffer, Gelechia; Stibaromacha
rebellis Meyrick, Leistogenes
recisella Staudinger, Alloclita
recitatella Walker, Gaphara
reducta Janse, Holaxyra; Leuropalpa
regia Meyrick, Strobisia; Satrapodoxa
religiosa Meyrick, Meteoristis
renigerellus Zeller, Ypsolophus; Anasphaltis
repandella Walker, Gelechia; Compsolechia
retusa Janse, Calliphylla
reversa Meyrick, Encrasima
revoluta Meyrick, Gelechia; Flexiptera
rhizogramma Meyrick, Ageliarchis
rhodopetala Meyrick, Zalithia; Charistica
rhombella Denis & Schiffermüller, Tinea; Gelechia
rhomboidella Linnaeus, Phalaena (Tinea); Chelaria; Hypatima
ribbeella Caradja, Nevadia; Vadenia
rifellus Zerny, Ceuthomadarus; Asarista
rigidellum Chrétien, Hypsipselon,
ritsemae Snellen, Adelomorpha
robiniella Fitch, Anacampsis; Sinoe
robusta Janse, Grandipalpa
robustus Butler, Ypsolophus; Epistomotis
† rohdendorfi Kusnezov, † Symmocites
rostrifera Meyrick, Elasiprora
rozsikella Rebel, Catabrachmia
rubentula Meyrick, Pachnistis; Erythriastis
rubida Turner, Heterozancla
rufescens Haworth, Recurvaria; Ceratophora
rufitecta Meyrick, Molopostola
rumicivorella Millière, Gelechia; Gladiovalva
rurigena Meyrick, Pachysaris

sacricola Meyrick, Zalithia; Cerycangela
saharae Walsingham, Eremica
sahib Gozmány, Syssymmoca
sandycitis Meyrick, Anorthosia; Musurga
santolinella Amsel, Archimetzneria
sardonias Meyrick, Procharista
scabrella Linnaeus; Cerostoma; Pycnopogon
scabrellus Chrétien, Pycnopogon,
sceletodes Meyrick, Proselotis
scenica Meyrick, Physoptila
schmidtiellus Heyden, Ypsolophus; Telephila

sciactis Meyrick, Steremniodes
sciaula Meyrick, Menecratistis
sciritis Meyrick, Brachyacma; Oxysactis
scytalias Meyrick. Parelliptis
seclusella Walker, Tonosa
segnis Meyrick, Trichembola
semiacma Meyrick, Ethirostoma
semifusca Meyrick, Iulactis
senectella Zeller, Gelechia; Adelphotropha
separabilis Walsingham, Diastaltica
sequella Linnaeus, Phalaena (Tinea); Chaetochilus
seraf Gozmány, Xenoplaxa
serenisca Meyrick, Irenidora
seriatopunctata Matsumura, Scythropiodes
sericiella Walsingham, Symmoca; Sagarancona
serotinella Busck, Gelechia; Filatima
serpentina Diakonoff, Panplatyceros
setosella Clemens, Trichotaphe; Begoe; Malacotricha
sevectella Walker, Gelechia; Ilingiotis
sexguttella Thunberg, Tinea; Microsetia; Nannodia
seydeli Gozmány, Afrosymmoca
siderosema Turner, Rhadinophylla
sigalota Meyrick, Ischnodoris
signella Hübner, Tinea; Symmoca
silacella Hübner, Tinea; Cleodora; Mesophleps; Paltodora
similicolor Janse, Ischnophylla
similis Amsel, Symmocoides; Dysspastus
similis Stainton, Gelechia; Mniophaga
simplex Walsingham, Onebala; Psamathoscopa
simulacrella Meyrick, Allocota; Allocotaniana
sinaica Frauenfeld, Gelechia; Cecidonostola; Parapodia
snellenella Walsingham, Dactylota; Neodactylota
sobria Meyrick, Macrotona
soffneri Riedl, Lerupsia
solida Walsingham, Eupragia
solitaria Staudinger, Pogochaetia; Pogonochaetia; Chaetopogon
sophroniellus Rebel, Holcopogon; Epanastasis
sophronistis Meyrick, Onebala; Larcophora
sophronopa Meyrick, Phricogenes
sparsella Joannis, Symmoca; Symmacantha
spartiella Schrank, Tinea; Anarsia
spathias Meyrick, Pharangitis
sphecopa Meyrick, Harmatitis
sphenophora Meyrick, Deuteroptila
spiculifera Meyrick, Mnesteria; Teucrodoxa
spiladias Meyrick, Lecithocera; Araeophylla
spinigera Meyrick, Anomoxena
spiraeae Staudinger, Rhynchopacha
spoliatella Walker, Gelechia; Hygroplasta
sporogramma Meyrick, Nothris; Empalactis
spudasma Walsingham, Theatria
squamodorella Amsel, Pseudoteleia
statices Staudinger, Holcophora
stenochorda Turner, Lophozancla; Phaeotypa
sterictis Meyrick, Brachmia; Dicranucha
stigma Staudinger, Epidola
stipella Linnaeus, Phalaena (Tinea); Microsetia; Nannodia
streblotis Meyrick, Ischnophenax
striatella Denis & Schiffermüller, Tinea; Isophrictis
strictella Chrétien, Coudia
strigifera Meyrick, Asapharcha
strigiplenella Walker, Vazugada
stygnota Walsingham, Glyphidocera; Eupolella; Eupolis
subalbata Meyrick, Brachypsaltis
subcinerea Haworth, Recurvaria; Aratrognathosia; Platyedra
subdiminutella Stainton, Gelechia; Ochrodia
subjectella Walker, Gelechia; Euzonomacha
sublustricella Walker, Gelechia; Hapalonoma
subocellea Stephens, Anacampsis; Reuttia
subsecivella Zeller, Gelechia (Brachmia); Biloba
subsimella Clemens, Parasia; Leucogonia; Leucogoniella
subversa Walsingham, Energia
suffusca Turner, Elachypteryx
sulamit Gozmány, Symmoletria; Parasymmoca
symbolistis Meyrick, Adoxotricha
symmetra Turner, Prosomura
symmocella Rebel, Epimesophleps
synaphrista Meyrick, Apothetoeca
synclepta Meyrick, Chthonogenes
synclepta Meyrick, Metaplatyntis
syncosma Meyrick, Sphenogrypa

tachytoma Meyrick, Cynicocrates
talantodes Meyrick, Mnesistega
tamaricicola Joannis, Parapodia

tamaricicola Walsingham, Cecidophaga; Cecidoplaga
tamariciella Amsel, Cecidonostola
tanyzancla Meyrick, Lacharissa
tapinota Walsingham, Catalexis
tarachodes Turner, Trigonophylla
tartarea Meyrick, Amphigenes
tauropis Meyrick, Lacistodes
telegraphella Walker, Noeza
tenebrella Hübner, Tinea; Monochroa
tenebrionellus Mann, Ceuthomadarus
tenuicornis Clarke, Arla
tenuiella Sattler, Horridovalva
tenuis Janse, Neopatetris
terpnodes Meyrick, Phylopatris
terrella Denis & Schiffermüller, Tinea; Bryotropha
terrestrella Zeller, Gelechia; Sautereopsis
testacea Meyrick, Compsosaris
testaceus Butler, Stoeberhinus; Staeberrhinus
tetraclina Meyrick, Timyra; Heteralcis
tetralychna Lower, Ardozyga
tetrapetra Meyrick, Eristhenodes
tetraptila Meyrick, Semodictis
tetrapunctella Thunberg, Tinea; Epithectis
tetroctas Meyrick, Dactylethra; Dactylethrella
thalamias Meyrick, Pessograptis
themelias Meyrick, Merocrates
thermaea Lower, Paltodora; Streniastis
thermochroa Meyrick, Gelechia; Hemiarcha
thermophaea Meyrick, Sirogenes
thiophara Turner, Catameces
tholaea Meyrick, Parapsectris
tholias Meyrick, Dolichotorna
tholochorda Meyrick, Tornodoxa
thorybodes Meyrick, Thiotricha
thrombodes Meyrick, Ptocheuusa; Meridorma
thryptica Meyrick, Hylograptis
thyrsicola Meyrick, Hypelictis; Deimnestra
timidella Clemens, Catastega
tinctella Hübner, Tinea; Acompsia
tonaea Meyrick, Demopractis
torrefacta Meyrick, Brachmia; Catelaphris
tortriciformella Clemens, Menesta
toxocosma Meyrick, Agathactis
trachyptera Janse, Schistovalva
traditionis Clarke, Euchionodes
traumatias Meyrick, Myrophila; Xenorrhythma
triangulella Busck, Gelechia; Faculta
triannulata Clarke, Paralida
triatomaea Mühlig, Gelechia; Cremona
trichoma Caradja, Mystax
trichroa Meyrick, Tipha; Heterodeltis
trierica Meyrick, Psittacastis
trifasciella Rebel, Dirhinosia
trinervis Meyrick, Aulacomima
trinota Clarke, Echinoglossa
trinotata Meyrick, Stryphnocopa
trinotella Herrich-Schäffer, Mesophleps; Uncustriodonta
tripleura Meyrick, Xystoceros
trisignella Janse, Parabrachmia
trisignis Meyrick, Gelechia; Schizovalva
trissoxantha Meyrick, Strobisia; Catoptristis
trivittellum Rebel, Catatinagma
tubigera Meyrick, Cratinitis
turpella Denis & Schiffermüller, Tinea; Guenea
typhicola Meyrick, Scieropepla
tyriocoma Meyrick, Orphanoclera

undina Meyrick, Apatetris; Macrocalcara
untomiella Busck, Untomia
uranopis Meyrick, Zalithia
usitata Butler, Depressaria; Thyrocopa
ustalella Fabricius, Tinea; Oxybelia; Rhinosia

vagans Walsingham, Ptychothrix
vagatioella Chambers, Eidothea
variana Meyrick, Stegasta
vaucheri Turati, Chretienella
venosa Busck, Galtica
venosa Butler, Topeutis; Orsotricha
venosulella Möschler, Depressaria; Deroxena
verbascella Denis & Schiffermüller, Tinea; Nothris
verberata Meyrick, Brachmia; Plexippica
verberata Meyrick, Plexippica
versicolorella Walker, Tocmia
victimella Walsingham, Chersogenes
vilella Zeller, Gelechia; Aratrognathosia; Platyedra
villosula Zeller, Clistothyris
vinitincta Walsingham, Cathegesis
violacea Busck, Atoponeura; Eunomarcha
violacellum Chrétien, Toxoceras
virgella Thunberg, Tinea; Lita
virginella Rebel, Symmoca; Parthenoptera
virgo Gozmány, Illahasis

virgularia Meyrick, Stochastica
viridans Meyrick, Sorotacta
vittella Busck, Duvita
vulgella Hübner, Tinea; Teleia; Teleiodes

wagnerella Zerny, Crossotocera; Rhipidocera
walsinghami, Dietz, Pseudochelaria
whalleyi Popescu-Gorj & Căpuşe, Microgonia
wilkella Linnaeus, Phalaena (Tinea); Argyritis
wiltshirei Povolný, Vladimirea

xanthastis Lower, Gelechia; Decatopseustis
xanthographa Walsingham, Athrinacia
xanthomochla Turner, Tanycyttara
xanthomorpha Meyrick, Placanthes
xanthophanes Meyrick, Anthinora
xanthoria Meyrick, Encolpotis
xanthoselene Walsingham, Proclesis
xerochroa Meyrick, Acraeologa
xerophaga Meyrick, Brachmia; Philarachnis
xeropis Meyrick, Pityocona
xylodeta Meyrick, Stereodmeta
xylomorpha Meyrick, Trachyedra
xylozona Meyrick, Pelocnistis

yuccasella Busck, Deoclona

zachroa Meyrick, Noeza; Eunebristis
zadiella Dumont, Tahla
zebrella Treitschke, Lita
zemiodes Durrant, Mometa
zinckenella Hübner, Tinea; Chrysia; Chrysoesthia
zonaea Meyrick, Aphnogenes
zonodeta Meyrick, Limenarchis

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THE ANT GENUS *POLYRHACHIS* F. SMITH IN THE ETHIOPIAN REGION (HYMENOPTERA: FORMICIDAE)

B. BOLTON

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ENTOMOLOGY Vol. 28 No. 5
LONDON: 1973

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BY

BARRY BOLTON K

Pp 283–369; 63 *Text–figures*

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By B. BOLTON

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SYNOPSIS

The ant genus *Polyrhachis* F. Smith is revised for the Ethiopian region. An account of the generic and subgeneric synonymy in the region is provided and a key to the 47 presently recognised species is included. The six recognisable species-groups within the region are discussed. A complete account of the synonymy of each species and a redescription of the previously known species, based upon the worker or female caste, are provided. Nine new species are described; one new subgeneric and 44 new specific or infraspecific synonyms are established. Biological data are included where known.

INTRODUCTION

THE ant genus *Polyrhachis* contains some 700 nominal species and forms, mainly distributed throughout the Old World tropics and subtropics but with a few species extending the range of the genus northwards into central China, Korea, Japan and the countries of the Middle East. The genus is entirely absent from the New World and from the islands of Madagascar, New Zealand and the Pacific islands east of Rotuma, in the Ellice Islands.

The greatest number of species inhabit the Indo-Malayan, Oriental and Australasian regions and up to the time of the present study only some 113 nominal species and forms were described from the Ethiopian region. Of these names a large percentage represented infraspecific taxa and in fact the number of actual species stood at 42.

Previous publications on the genus in the Ethiopian region are numerous (see references), but apart from lists of species found in different localities and descriptions of new forms, very little critical or comparative work has been accomplished since the publication by André (1887) of a key to the then-known species of the region. In this key he stated his doubts of the validity of some species and the placement of others in the regional fauna; but apart from a few obvious synonymies at the end of the last century no detailed study of the fauna of the region has been made. Santschi (1914*a*) published a key to the infraspecific forms of *P. schistacea* (Gerstaecker) and later followed this with a similar key for *P. militaris* (F.) (Santschi, 1924). The final key published by Santschi (1939) dealt with the *P. revoili* E. André complex and was the most useful aid to identification available at that time, despite the fact that it only dealt with the group as originally constructed by Emery (1925). No attempt was made to remove obviously unrelated species, nor to include related forms.

Arnold (1924) gave a key to the South African species in his monograph of the Formicidae of South Africa and included a number of good descriptions of the more common, local forms. Wheeler (1922*a*) described some new species and summarised the known biology of a number of others.

The nesting habits of the genus as a whole have been discussed by Hung (1967) who sums up by saying that four types may be recognised, as follows:

1. Arboreal: carton and silk nests amongst leaves and twigs.
2. Lignicolous: nests in the cavities of plants.
3. Terrestrial: nests on the ground under any object.
4. Subterranean: nests in the soil, without cover.

All four types are found in the Ethiopian regional fauna. Obviously, the first on the list is more or less restricted to forest species whilst the third and fourth are most commonly found in savannah forms. The second type listed above is rather a broad category and as far as the Ethiopian region is concerned includes such diverse nest sites as those of *P. decemdentata* E. André in rotten or termite-mined tree branches and those of *P. cubaensis* Mayr inside stem galls. It would probably also hold *P. otleti* Forel which nests in rot holes or crevices in tree trunks and covers the entrance with a mesh of silk and vegetable fibres. The nesting habits where known are discussed in more detail under the individual species headings, as is any other information on the biology of the species.

The distribution of the species may be divided roughly into forest and savannah forms although some may penetrate the edges of one from the other. The species *P. viscosa* F. Smith and *P. schistacea* may be considered as typical of the savannah forms, spreading throughout the continent; the former even occurs on the coastal plains of West Africa. Nests are constructed in the earth and the ants are fast-moving, ascending grasses and bushes to forage. The forest species are typified by *P. militaris* and *P. decemdentata*, arboreal retiring forms foraging singly upon the trees and with a marked tendency to release their grip and fall into the undergrowth if disturbed.

The present study is based chiefly upon the worker caste as the females of many species are unknown. Where the female is known, notes are added under the appropriate species heading. Four species were originally described only from the female caste; three of these have been associated with workers in the present study. Associated males are extremely rare, so rare in fact as to be of no value to the present work, and they are omitted from the survey. Hung (1967) has stated that the male genitalia proved to be quite similar throughout the genus, but a detailed study will have to await the amassing of numbers of worker-associated males.

MEASUREMENTS AND INDICES

Total length (TL). The length of the entire ant measured in dorsal view with the head stretched out. In most, if not all species of *Polyrhachis* the head is carried in life with its long axis at right-angles to the long axis of the body.

Head length (HL). The length of the head in perfect full face view, measured from the middle of the anterior clypeal margin to the posteriormost point of the occipital margin.

Head width (HW). The width of the head in perfect full face view, measured immediately in front of the eyes.

Cephalic index (CI). $\frac{\mathrm{HW} \times 100}{\mathrm{HL}}$

Scape length (SL). The maximum length of the antennal scape, excluding the basal constriction or neck.

Scape index (SI). $\frac{\mathrm{SL} \times 100}{\mathrm{HW}}$

Pronotal width (PW). The width of the pronotal dorsum measured at the bases of the pronotal spines or across the humeri in species without such spines.

Metathoracic tibial length (MTL). The maximum length of the tibia of the metathoracic (hind) leg.

All measurements are expressed in millimetres.

MUSEUMS AND OTHER DEPOSITORIES

The following abbreviations are used in the text to indicate museums and other institutions.

BMNH,	British Museum (Natural History), London.
CRIG, New Tafo.	Cocoa Research Institute of Ghana, New Tafo.
MCSN, Genoa.	Museo Civico di Storia Naturale 'Giacomo Doria', Genoa.
MCZ, Boston.	Museum of Comparative Zoology, Cambridge, Mass.
MHN, Geneva.	Museum d'Histoire Naturelle, Geneva.
MNHN, Paris.	Museum National d'Histoire Naturelle, Paris.

MNHU, Berlin. Museum für Naturkunde der Humboldt-Universität, Berlin.
MRAC, Tervuren. Musée Royal de l'Afrique Centrale, Tervuren.
NM, Basle. Naturhistorisches Museum, Basle.
NM, Vienna. Naturhistorisches Museum, Vienna.
NMR, Bulawayo. National Museum of Rhodesia, Bulawayo.
UG, Legon. University of Ghana, Legon.

POLYRHACHIS F. Smith

Polyrhachis F. Smith, 1857 : 58. Type-species : *Formica bihamata* Drury, 1773 : 73, pl. 38, figs 7, 8, worker; by original designation.

Hoplomyrmus Gerstaecker, 1858 : 262. Type-species : *Hoplomyrmus schistaceus* Gerstaecker, loc. cit., worker; by monotypy. [Synonymy by Mayr, 1863 : 446.]

Subgenus *MYRMA* Billberg

Myrma Billberg, 1820 : 104. Type-species : *Formica militaris* Fabricius, 1781 : 493, worker; by designation of Wheeler, 1911.

Pseudocyrtomyrma Emery, 1921 : 18 [as a subgenus of *Polyrhachis*]. Type-species : *Polyrhachis revoili* E. André, 1887 : 285, female; by original designation. **Syn. n.**

GENERIC DIAGNOSIS. *Worker.* Monomorphic, medium to large (4·4 to 14·1 mm) ants belonging to the formicine tribe Camponotini.

Antennae 12-segmented, the scapes inserted some distance behind the posterior clypeal margin (usually a distance greater than the basal width of the scape). Palp formula 6,4; mandibles usually with five, rarely with four teeth. Eyes well developed. Pronotum armed with a pair of spines, teeth or tubercles in all species of the Ethiopian region, the propodeum usually armed with two spines, teeth or tubercles, or a pair of ridges, rarely with only a single transverse ridge or completely unarmed. Promesonotal suture usually present (absent from *khepra*), the development of the metanotal groove variable. Mesoscutellum very rarely present. In the single species in which the mesoscutellum occurs on the dorsum of the alitrunk, it is not separated from the scutum by a deep impression. Margination of the alitrunk variable, often present and complete but showing all stages through to a fully immarginate condition. Petiole usually with four but occasionally with two or six spines or teeth of variable configuration. Gaster large, globose, the first tergite extensive, usually forming at least half of the dorsal surface. The anterior face of the first gastral tergite is often truncated or concave. Acidopore not borne upon a conical projection of the hypopygium, usually concealed by the pygidium when not in use.

Female. As worker but with the alitrunk massively developed and with a corresponding reduction in armament and margination. The petiolar spines tend to be reduced and are usually smaller than those of the associated worker. Ocelli are present and wing venation is of the usual camponotine form.

Male. Very poorly known, in most cases indistinguishable from the males of *Camponotus*.

GENERIC AND SUBGENERIC SYNONYMY. Smith (1857) erected the genus *Polyrhachis* to include some twenty species and designated *Formica bihamata* Drury as the type-species. The following year Gerstaecker (1858) formed the monotypic genus *Hoplomyrmus* with the type-species *schistaceus* Gerstaecker for a large species from the Ethiopian region. These two type-species were recognised as being congeneric and *Hoplomyrmus* was later synonymised with *Polyrhachis*.

It has been known for some time that *Polyrhachis* is actually a junior synonym of *Myrma* Billberg. However, as the original publication of the name *Myrma* was in a rather obscure volume, it was overlooked for some time. Since its rediscovery all authorities have treated *Myrma* as a subgenus of *Polyrhachis* with the exception of Wheeler (1911), who considered that *Myrma* should be used in place of the more popular and well-known name. This claim was rejected by other workers of the period and by 1922 Wheeler was again using *Myrma* as a subgenus.

Hung (1967 : 396–398) has discussed in detail the validity of the name *Polyrhachis* in the light of the above facts and has concluded that *Myrma* is the valid name for the genus, but he asks that *Polyrhachis* be retained as it is the name in common use and as its replacement would 'cause nomenclatorial chaos'. The present author is in agreement with Hung's findings and recommendations.

Up to the time of the present study two subgenera were known from the Ethiopian region, namely *Myrma* and *Pseudocyrtomyrma* Emery. The latter group was not well defined at its inception and the present study has shown, as discussed below under the *revoili* species-group, that *Pseudocyrtomyrma* is not separable from *Myrma*. The statement of synonymy on p. 288 is therefore in order as regards the genus *Polyrhachis* in the Ethiopian region.

KEY TO SPECIES

(Based on worker caste)

1 Clypeus with a shallow, rectangular lobe flanked by a pair of denticles or teeth. Eyes situated well up on the head, usually not breaking the outline of the sides in full-face view. Alitrunk broad and foreshortened, with a swollen appearance in dorsal view, usually not more than 1·1 times longer than broad. Pronotum always marginate, at least for part of its length, but either the mesonotum or propodeum or both not marginate. Propodeum unarmed, the declivity extremely deep (Text-figs 60, 61) 2

– Clypeus either arcuate and entire or with a truncated median lobe. Eyes breaking the outline of the sides of the head in full-face view except when the eyes are flat. Alitrunk without a foreshortened and swollen appearance in dorsal view, usually more than 1·3 times longer than broad. Alitrunk usually either marginate or totally without lateral margination throughout its length; if partially marginate then the propodeum is armed with spines, teeth, tubercles or raised ridges . . 6

2 Petiole armed with two spines or teeth 3

– Petiole armed with four spines or teeth 4

3 Propodeum without a posterior transverse margination separating the dorsum from the declivity. Petiole dorsolaterally with two long spines, curved backwards and somewhat outwards at their apices, so that the whole petiole is lyre-shaped (Text-fig. 25). (West and Central Africa) . . . . . . ***curta*** (p. 346)

– Propodeum with a weak posterior transverse margination separating the dorsum from the declivity. Petiole laterally with a pair of small triangular teeth (Text-fig. 48) (Ghana) . . . . ***lestoni*** (p. 349)

4 Propodeum marginate laterally and posteriorly, so that the dorsum is separated from the sides and declivity 5

– Propodeum not at all marginate, so that the dorsum rounds into the sides and declivity without interruption. (Congo (Kinshasa)) . . . . ***alexisi*** (p. 346)

5 In dorsal view the sides of the propodeum projecting strongly beyond the lateral marginations so that the total width of the propodeum is notably greater than the width between the marginations. Sides of head in front of eyes concave in full-face view (Text-fig. 60) (Ghana) . . . . ***latharis*** (p. 348)

– In dorsal view the sides of the propodeum hardly projecting beyond the lateral marginations so that the total width of the propodeum is bounded, at least posteriorly by the marginations. Sides of head in front of eyes straight in full-face view. (Congo (Kinshasa)) . . . . ***limitis*** (p. 350)

6 Pronotum not at all marginate, the dorsum curving smoothly and without interruption into the sides 7

– Pronotum marginate at least for part of its length, usually throughout its entire length. Margination present as a raised or projecting flange, a ridge, or an acute angle separating the dorsum from the sides 16

7 Eyes flat and somewhat sunk into the surface of the head. (Cameroun) ***platyomma*** (p. 337)

– Eyes convex, not sunk into the surface of the head 8

8 Metanotal groove broad and deeply impressed. Propodeum armed with a pair of long upcurved spines, as long as or longer than those of the pronotum. Petiole with four long, back-curved spines. Dorsum of alitrunk with numerous stout, usually yellow hairs 9

– Metanotal groove weakly developed or absent, never broad nor impressed, usually only represented by a line breaking the sculpturation. Propodeum unarmed or with a pair of tubercles, teeth or ridges which are notably smaller than those of the pronotum. Petiole with a dorsal pair of spines and a lateral pair of teeth or shorter spines. Hairs on dorsum of alitrunk fine or absent 10

9 Promesonotal suture broad and deeply impressed. Propodeum without a median tuberculiform prominence between the spines (Text-fig. 18). (West and Central Africa, Uganda) . . . . ***monista*** (p. 343)

– Promesonotal suture narrow, not impressed. Propodeum with a median tuberculiform prominence between the spines (Text-fig. 19). (Ghana and Congo (Kinshasa)). . . . . ***spitteleri*** (p. 344)

10 Antennal scapes or dorsum of alitrunk or both with erect hairs. Mesoscutellum not visible on dorsum of alitrunk 11

– Antennal scapes and dorsum of alitrunk without erect hairs. Mesoscutellum present on dorsum of alitrunk. (South Africa : Natal) . . ***gamaii*** (p. 351)

11 Pronotal dorsum sculptured, armed with a pair of distinct spines 12

– Pronotal dorsum smooth and polished, unsculptured apart from pits from which hairs arise, armed with a pair of small or minute teeth or tubercles 15

12 Propodeum armed posteriorly with a pair of transverse ridges separating the dorsum from the declivity; the ridges not meeting medially (Text-fig. 17) 13

– Propodeum armed posteriorly with a pair of short, upcurved teeth, between which the dorsum curves into the declivity 14

13 Median portion of clypeus projecting anteriorly as a truncated rectangular lobe. Relatively more slender species, CI 73, HW 1·00, PW 0·89. (Congo (Kinshasa)) ***volkarti*** (p. 341)

– Median portion of clypeus arcuate and entire, not projecting as a truncated rectangular lobe. Relatively more stout species. CI > 75, HW > 1·20, PW > 1·00. (Cameroun, Congo (Brazzaville)) . . . . ***lanuginosa*** (p. 335)

14 More than 30 erect hairs on each antennal scape. Dorsal surfaces of mesonotum and propodeum with a disorganised rugulation or a rugoreticulum; pubescence masking alitrunk sculpturation at least in part. Larger (TL 6·1 or more), relatively more thickset (PW 1·40 or more) species. (East and South Africa) ***revoili*** (p. 338)

– Less than 10 erect hairs (usually none) on each antennal scape. Dorsal surfaces of mesonotum and propodeum sharply longitudinally rugose; pubescence not masking alitrunk sculpturation. Smaller (TL 6·1 or less), relatively more slender (PW 1·26 or less) species. (West and Central Africa) . . . . ***weissi*** (p. 342)

15 Head unsculptured, with a short, longitudinal groove terminating in a pit-like depression posteriorly; this structure situated close to the external margin of the antennal insertion (Text-fig. 56). Sutures of alitrunk present on dorsum but poorly developed. (Ghana) . . . . ***braxa*** (p. 333)

– Head sculptured, without a groove and pit as described above. Dorsum of alitrunk without sutures. (Ghana) . . . . ***khepra*** (p. 334)

16 Metanotal groove represented only by a line or an indistinct scoring across the dorsum of the alitrunk which may fail to break the sculpturation; metanotal groove never impressed, sometimes completely absent (Text-figs 12–16) . . 17

– Metanotal groove distinct, broad and always impressed; in profile often with the appearance of a V or U-shaped trench separating the mesonotum from the propodeum (Text-figs 10, 11) 26

17 Antennal scapes with numerous erect hairs standing out at right-angles to the long axis of the shaft 18

– Antennal scapes without erect hairs standing out at right angles to the shaft. (A few at the extreme apex may be present, projecting in the same direction as the long axis of the scape) 20

18 Propodeum with a pair of transverse ridges separating the dorsum from the declivity, the ridges fail to meet medially and a small but distinct gap is present (Text-fig. 16). (West and Central Africa) . . . . ***otleti*** (p. 336)

– Propodeum with a pair of teeth or minute tubercles, between which the dorsum curves into the declivity over its entire width 19

19 Sculpturation of head in space between eye and frontal carina regularly, finely longitudinally striate-rugose. Dorsum of mesonotum separated from sides by an obtuse angle (Text-figs 47, 59). Larger species, TL 7·0 mm or more, HL > 1·50, PW 1·00 mm. (Uganda) . . . . ***transiens*** (p. 340)

– Sculpturation of head in space between eye and frontal carina an irregular rugoreticulum, the spaces between which are finely reticulate-punctate. Dorsum of mesonotum rounding into sides without interruption (Text-figs 52, 58). Smaller species, TL < 5·0, HL < 1·30, PW < 1·00. (Ghana) . . . . . ***regesa*** (p. 337)

20 Propodeum not marginate laterally; pronotum very weakly marginate for about half its length. Sculpturation everywhere a fine superficial reticulation or reticulate-puncturation. (Cameroun) . . . . . . ***aenescens*** (p. 332)

– Propodeum marginate laterally; pronotum marginate throughout its length. Sculpturation of alitrunk basically a fine reticulate-puncturation overlaid by longitudinal rugae or a loose rugoreticulum 21

21 Propodeum with a transverse raised ridge running between the spines or teeth and separating the dorsum from the declivity (Text-fig. 13), the ridge often raised into a tooth or tubercle medially 22

– Propodeum without a transverse raised ridge running between the spines or teeth, the dorsum passing through an angle or curving directly into the declivity. Median tooth or tubercle always absent 25

22 Gaster finely longitudinally striate. (South Africa, Malawi) . . ***arnoldi*** (p. 324)

– Gaster finely reticulate-punctate 23

23 Apex of antennal scape suddenly broadened, hood-like in dorsal view, concealing the base of the first funicular segment which is strongly dorsoventrally flattened basally (Text-fig. 22). Eyes usually quite flat, occasionally weakly convex. (Savannah regions throughout Africa) . . . . ***viscosa*** (p. 330)

– Apex of antennal scape not suddenly broadened, not hood-like nor concealing the base of the first funicular segment, this segment not dorsoventrally flattened basally. Eyes convex 24

24 Propodeum with only a transverse ridge running between the spines; the ridge may be arched medially but no tooth or tubercle is present. Propodeal spines outcurved directed posterolaterally, only very slightly upcurved. (South and East Africa) ***spinicola*** (p. 329)

– Propodeum with a transverse ridge running between the spines which is raised medially into a tooth or tubercle. Propodeal spines directed upwards and upcurved. (South Africa, Mozambique, Tanzania) ***cubaensis*** (p. 325)

25 Petiole with a single pair of well-developed spines situated at the dorsolateral corners. On the dorsal margin between these spines are a pair of small teeth or tubercles (Text-fig. 40). (Ghana, Uganda, Congo (Kinshasa)) ***nigrita*** (p. 328)

– Petiole with two pairs of well-developed spines; the dorsal pair somewhat longer than the lateral (Text-fig. 30). (South Africa : Natal) ***durbanensis*** (p. 327)

26 Petiole with two spines 27

– Petiole with four or six spines or teeth 28

27 Petiolar spines subparallel, strongly hooked backwards at their apices (Text-fig. 24). Clypeus carinate; gastral pubescence usually golden. (West and Central Africa, Uganda, Angola) ***laboriosa*** (p. 308)

– Petiolar spines divergent, curving posteriorly along their length but not hooked apically (Text-fig. 23). Clypeus not carinate; gastral pubescence not golden, usually grey. (Congo (Kinshasa), Angola) ***wellmani*** (p. 328)

28 Petiole with six spines or teeth, the smallest pair situated behind the lateral pair of spines. (West and Central Africa) ***decemdentata**** (p. 302)

– Petiole with four spines or teeth of variable configuration 29

29 Pronotal dorsum without erect hairs 30

– Pronotal dorsum with erect hairs 36

30 Dorsum of head with a pair of erect hairs situated on a level with the posterior margins of the eyes. If the hairs have been lost, then the site of their original insertion is marked by a pair of distinct pits 31

– Dorsum of head without erect hairs; no hairs nor pits marking the former insertions of hairs present on the dorsum on a level with the posterior margins of the eyes 32

31 Anterior clypeal margin with a small, shallow impression or notch medially. In dorsal view the propodeal marginations somewhat convex in outline and gradually diverging posteriorly to the propodeal teeth. Antennal scapes relatively extremely long (SI 181). (Ghana) ***decellei*** (p. 301)

– Anterior clypeal margin arcuate and entire, without a shallow median impression. In dorsal view the propodeal marginations convex in outline, broadest at about the midlength of the segment and converging anteriorly to the metanotal groove and posteriorly to the propodeal tooth. Antennal scapes relatively much shorter (SI 159). (Ghana) ***esarata*** (p. 303)

32 Head, body and appendages covered with a very dense, silvery pubescence. Pronotal spines long, in lateral view directed downwards and forwards, somewhat downcurved. Large species, $\mathrm{HL} > 2{\cdot}00$, $\mathrm{HW} > 1{\cdot}55$. (South and East Africa) ***schlueteri*** (p. 321)

– Head, body and appendages usually with sparse pubescence; if dense then the pubescence is not silvery in colour. Pronotal spines long or short, but in lateral view not directed downwards and forwards, nor downcurved. Smaller species. $\mathrm{HL} < 2{\cdot}00$, $\mathrm{HW} < 1{\cdot}45$ 33

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* The worker of *andrei* would be expected to run out at this point.

33 In posterior view the side of the head at the ventral margin of the eye projecting laterally below the eye and forming a shield or blinder. In side view the ventral margin appearing concave, so that the eye is reniform (Text-fig. 2). In full-face view, sides of head in front of eyes noticeably concave. Larger species with relatively long antennae. HL 1·85 or more, $\mathrm{SI} > 170$. (West and Central Africa) . . . . ***concava*** (p. 299)

– In posterior view the side of the head at the ventral margin of the eye not projecting below the eye. In side view the ventral margin convex to shallowly concave. In full-face view, sides of head in front of the eyes varying from more or less straight to convex. Smaller species with relatively short antennae, $\mathrm{HL} < 1{\cdot}80$, $\mathrm{SI} < 155$ 34

34 Dorsum of pronotum strongly transversely concave, the lateral marginations projecting as raised flanges. (Congo (Kinshasa)) . . . . . ***aerope*** (p. 296)

– Dorsum of pronotum very shallowly concave to transversely convex, the lateral marginations not projecting as raised flanges 35

35 Sculpturation of head a fine, dense, reticulate-puncturation. On the sides of the head below and in front of the eye, and on the gena between the eye and the posterior clypeal margin with numerous more distinct pits, usually arranged in groups of three or four. Larger species, $\mathrm{HL} > 1{\cdot}60$. (West and Central Africa) ***alluaudi*** (p. 297)

– Sculpturation of head a fine, dense, reticulation; the sides of the head below and in front of the eye, and the gena between the eye and the posterior clypeal margin with the same sculpturation as the dorsum. Smaller species, $\mathrm{HL} < 1{\cdot}30$. (West and Central Africa) . . . . ***rufipalpis*** (p. 317)

36 Lateral pair of petiolar spines as long as, or longer than the dorsals 37

– Lateral pair of petiolar spines short, always notably shorter than the dorsals, may be reduced to a pair of acute teeth 41

37 Antennal scapes with numerous erect hairs projecting from the shaft. (Ghana) ***asomaningi*** (p. 298)

– Antennal scapes without erect hairs projecting from the shaft 38

38 First gastral tergite finely longitudinally striate-rugose, with numerous small punctures between the rugae. ('Equatorial Africa') . . . ***phidias*** (p. 316)

First gastral tergite finely superficially reticulate or reticulate-punctate . . . 39

39 Lateral pair of petiolar spines enormously developed, many times larger than the dorsals, which are reduced to a pair of short spines (Text-fig. 41). (Congo (Kinshasa)) . . . . ***cornuta*** (p. 300)

– Lateral pair of petiolar spines not greatly developed; the dorsals as long as, or only a little shorter than the laterals 40

40 Face with a short, longitudinal, shallow groove terminating in a depression posteriorly; situated close to the outer margin of the antennal socket. Dorsum of propodeum extremely finely and densely longitudinally striate. (West and Central Africa, Uganda) . . . . ***lauta*** (p. 311)

– Face without a short, longitudinal, shallow groove terminating in a depression posteriorly. Dorsum of propodeum coarsely and distinctly, transversely striate. (West and Central Africa, Uganda) . . . . ***fissa*** (p. 304)

41 Propodeum not marginate. Entire body very deeply and regularly striate, the spaces between the striae strongly convex, giving a ploughed appearance. This sculpturation V-shaped on the propodeum, longitudinal on head and rest of dorsal alitrunk (Text-fig. 62). (Ghana, Congo (Brazzaville)) . . . . ***sulcata*** (p. 322)

– Propodeum marginate. Sculpturation not as above; if striate then finely so, not V-shaped on propodeum 42

42 Dorsum of propodeum separated from decliivty by a strongly arched transverse, raised ridge running between the spines. First gastral tergite reticulate-punctate, overlaid on the basal half by a fine, dense, longitudinal rugulation. (Central Africa) **latispina** (p. 309)

– Dorsum of propodeum not separated from declivity by a transverse ridge, the two surfaces confluent. First gastral tergite usually reticulate or reticulate-punctate, more rarely rugose 43

43 Dorsum of alitrunk with erect hairs present only on the pronotum. Side of head between ventral border of eye and ventrolateral margin without erect hairs. Gaster highly polished, with a very fine, superficial reticulation. (South and East Africa) . . . . **gagates** (p. 305)

– Dorsum of alitrunk with erect hairs present on all segments. Side of head between ventral border of eye and ventrolateral margin with erect hairs. Gaster usually dull, with a fine reticulate-punctate sculpturation, or sculpturation hidden by pubescence 44

44 Pubescence abundant everywhere, hiding the sculpturation of the dorsal alitrunk and gaster, at least in part; often silvery or golden in colour on part or all of the body. Relatively broader, more thickset species, HW > 2·3, CI > 82, PW > 2·0 45

– Pubescence sparse, not hiding the sculpturation of the alitrunk or gaster, usually greyish in colour. Relatively narrower, more slender species, HW < 2·3, CI 80 or less, PW < 2·0. (Savannah regions throughout Africa) . . **schistacea** (p. 318)

45 Lateral margination of alitrunk, especially pronotum, usually extended as a raised flange; the alitrunk somewhat concave dorsally between the marginations. Pubescence usually with a golden, brassy or bronze tinge on the alitrunk, gaster, or both. Erect hairs usually yellowish, not sinuate. Head with longitudinal rugulations which are also visible on the pronotal dorsum, especially at the bases of the spines. Eyes convex. (Forest regions throughout Africa) **militaris** (p. 313)

– Lateral margination of alitrunk not extended as a raised flange, the alitrunk flat to weakly convex dorsally. Pubescence long, everywhere with a silvery tinge. Erect hairs abundant, silver-grey, sinuate or curved. Sculpturation everywhere, beneath the pubescence, of a fine, superficial reticulation. Eyes flat to weakly convex. (East Africa) . . . . **medusa** (p. 312)

THE SPECIES-GROUPS

The 47 recognised species of *Polyrhachis* in the Ethiopian region can be divided into six groups of species, most of which are intergradient, on morphological grounds. The groupings are as follows:

The *militaris*-group; including the species *aerope* Wheeler, *alluaudi* Emery, *andrei* Emery, *asomaningi* sp.n., *concava* E. André, *cornuta* Stitz, *decellei* sp.n., *decemdentata* E. André, *esarata* sp.n., *fissa* Mayr, *gagates* F. Smith, *laboriosa* F. Smith, *latispina* Emery, *lauta* Santschi, *medusa* Forel, *militaris* (F.), *phidias* Forel, *rufipalpis* Santschi, *schistacea* (Gerstaecker), *schlueteri* Forel, *sulcata* E. André, *wellmani* Forel.

The *viscosa*-group; including *arnoldi* Forel, *cubaensis* Mayr, *durbanensis* Forel, *nigrita* Mayr, *spinicola* Forel, *viscosa* F. Smith.

The *revoili*-group; including *aenescens* Stitz, *braxa* sp.n., *khepra* sp.n., *lanuginosa* Santschi, *otleti* Forel, *platyomma* Emery, *regesa* sp.n., *revoili* E. André, *transiens* sp.n., *volkarti* Forel, *weissi* Santschi.

The *monista*-group; including *monista* Santschi and *spitteleri* Forel.
The *alexisi*-group; including *alexisi* Forel, *curta* E. André, *latharis* sp.n., *lestoni* sp.n., *limitis* Santschi.
The *gamaii*-group; including the single species *gamaii* Santschi.

THE *MILITARIS*-GROUP

The group is characterised by the complete margination of the pronotum, mesonotum and in all but one species (*sulcata*) the propodeum, and the markedly impressed metanotal groove. The margination of the alitrunk is interrupted at the sutures. The majority of species have an unmodified, arcuate clypeal margin and have retained the armament of the propodeum as a pair of upcurved teeth or spines, which in some species are reduced to mere tubercles, but only very rarely are they completely lost. Sculpturation in the group consists usually of a fine, superficial reticulation or a regular striation or striate-rugulation. Sculpturing of the form found in the *viscosa*-group, of a fine dense reticulate-puncturation overlaid by a rugoreticulum is very rare, but numerous species have the gaster reticulate-punctate.

Within the group the species tend to polarise into one of three complexes, centring on *fissa*, *concava* and *militaris* respectively. The species allied to *fissa* tend to be shorter, more stoutly built forms with a stronger sculpturation, usually of longitudinal striae or rugae. The pronotal spines tend to be short, flattened and broadly triangular in dorsal view whilst the petiolar armament shows all spines of approximately equal length or with the lateral pair developed at the expense of the dorsals. In the series *fissa*——→*asomaningi*——→*decemdentata*——→*phidias*——→*cornuta* there is a gradual reduction in the length of the dorsal pair of spines, and a gradual increase in the length and thickness of the laterals, until in *cornuta* the dorsals are reduced to a pair of very short spines. This series appears to parallel the condition found in part of the *viscosa*-group. All species closely related to *fissa* have numerous erect hairs on the dorsum of the head and alitrunk, but these may be absent from the appendages.

The species most closely related to *concava* tend to be more slender and elongate forms, of small to medium size and with a fine sculpturation. This is usually a superficial reticulation but in some is a fine and dense reticulate-puncturation. Erect hairs are usually only present on the anterior clypeal margin and the apex of the gaster, but in some species a single pair of hairs is present on the dorsum of the head. The petiole is always armed with a pair of long dorsal spines, sometimes very long and recurved over the base of the first gastral tergite, and a pair of smaller spines or teeth laterally.

The allies of *militaris* are large species, often 10 mm or more in total length. General build of the body varies but the majority are stocky, rather broad species. Sculpturation varies from striate to a very fine superficial reticulation, but all species are clothed with erect hairs on the head, appendages, gaster and at least part of the dorsal alitrunk. The petiole is armed with a pair of long dorsal spines and a shorter pair of lateral spines or teeth. In some species the laterals have been completely lost. The sequence *latispina*——→*sulcata*——→*gagates*——→*wellmani* shows the gradual reduction of the lateral spines to teeth and finally, in *wellmani*, their disappearance.

Species of the *militaris* group are distributed throughout Africa, but those related to *fissa* and *concava* are mostly confined to forested regions. The group appears to be the basic stock, from which members of the remaining groups have developed by reduction of the characters listed above. The only exception to this assumption is the *gamaii* group which seems quite unrelated.

Polyrhachis aerope Wheeler

Polyrhachis aerope Wheeler, 1922*a* : 265, figs 72 c, d. Holotype worker, CONGO (KINSHASA): Niangara (*Lang* and *Chapin*) (depository unknown).

I have not been able to see the unique worker of this species, but the original description and figures are good enough to delimit the species. The description is reproduced below in a somewhat amended condition, to fit in with the format used for other species in the survey.

Worker. TL 'somewhat less than 6 mm'. CI approx. 74, SI approx. 147 (approximated from Wheeler, 1922*a*, fig. 72c).

Anterior clypeal margin arcuate, entire. Eyes convex, prominent. The sides of the head in front of the eyes shallowly convex. Behind the eyes the sides round into the very convex occipital margin. Alitrunk marginate throughout its length, the margination interrupted at the sutures. Dorsal surface of alitrunk concave, with strong, upturned margins. Pronotum armed with a pair of long, acute spines; propodeum with a pair of small, slightly recurved teeth. Promesonotal suture distinct; metanotal groove developed, impressed. In dorsal view the lateral margins of the pro- and mesonota converging posteriorly, almost parallel on the propodeum. Petiole with a pair of long dorsal spines and a laterally placed pair of teeth.

Erect hairs absent from dorsal surfaces of head and body; pubescence short and sparse, visible only on sides of alitrunk, clypeus and appendages.

Gaster very minutely and superficially punctate; head, thorax and petiole finely coriaceous or shagreened. Colour black, the palpi and antennal insertions reddish.

As Wheeler (1922*a* : 266) points out, this species is very closely related to *concava*. The two species may be separated by the larger size of *concava* (TL 6·8 or more), the different shape of the sides of the head, and the notably greater SI of 172 or more. Besides these characters, Wheeler makes no mention of any modification of the ventral margin of the eye, a feature typical of *concava*; but if the eye of *aerope* is modified as in *concava* then the synonymy of the two species will have to be considered.

The single specimen from which the species was described was recovered from the stomach of a frog.

Polyrhachis alluaudi Emery

(Text-figs 3, 10, 38)

Polyrhachis alluaudi Emery, 1891 : 567, pl. 15, figs 9, 10. Holotype worker, IVORY COAST : Assinie (*Ch. Alluaud*) (MCSN, Genoa) [examined].

Polyrhachis alluaudi var. *anteplana* Forel, 1916 : 448, Holotype worker, CONGO (KINSHASA) (*H. Kohl*) (MHN, Geneva) [examined]. **Syn. n.**

Worker. TL 6·7–7·1, HL 1·67–1·78, HW 1·26–1·37, CI 75–77, SL 1·81–2·03, SI 143–148, PW 1·15–2·03, MTL 1·92–2·08. (4 measured.)

Anterior clypeal margin convex, arcuate, entire except for a few median notches marking the sites of insertion of the marginal clypeal hairs. In profile the clypeal outline sinuate, broadly and shallowly S-shaped. Eyes convex, the sides of the head in front of the eyes elongate, straight to weakly concave and somewhat convergent anteriorly. Alitrunk marginate throughout its length, interrupted at the sutures. Pronotum flat to shallowly transversely concave, armed with a pair of short spines. Mesonotum flat to shallowly concave. Propodeum armed with a pair of upcurved teeth, the dorsal surface concave, especially behind the metanotal groove. Sutures well developed on dorsum of alitrunk; the promesonotal incised, the metanotal groove deeply impressed. Petiole with four spines, the dorsal notably longer than the lateral pair.

Erect hairs present only on the anterior clypeal margin and the gastral apex. An extremely sparse and fine pubescence present, most easily seen on the sides of the alitrunk.

Sculpture everywhere of a fine, dense reticulate-puncturation, the sides of the head, especially below and in front of the eyes with numerous coarser punctures.

Female, as worker, with the usual differences associated with the caste.

The holotype worker of *alluaudi* is very damaged and mounted upon a card in several pieces, along with pieces of a female (head and wings), and a few parts of a second worker (part of alitrunk, one eye, a fragment of head capsule, petiole), as mentioned by Emery in the original description. The head of the holotype is crushed and the alitrunk mounted upside-down. For this reason the measurements given above apply to the holotype of *anteplana* and the other material examined. However, enough of the type specimens remained to make a comparison with *anteplana*, which was found to be a synonym, differing from *alluaudi* only in the slightly more concave propodeum and (apparently) somewhat larger size.

The species belongs to the *militaris* group and appears to be closest related to *rufipalpis*, from which it differs in size (larger) and in possessing distinct, scattered punctures on the sides of the head. These punctures may occur singly but are usually in closely approximated groups of three or four.

The nest of the species was described and figured in the original description and was reproduced by Wheeler (1922*a* : 267, fig. 74). Emery stated that the nest was constructed of rather coarse vegetable fibres loosely glued together and attached to the underside of a leaf about 1·7 m above the ground. The nest appeared as a low-vaulted chamber with the entrance situated at the apex of a funnel-like extrusion arising from near the centre of the nest.

Wheeler (1922*a* : 266) states that a single worker of the species was found in the stomach of a frog.

MATERIAL EXAMINED.

CONGO (KINSHASA) : Stanleyville (*A. Collart*).

Also reported from Ivory Coast (type data).

Polyrhachis andrei Emery

Polyrhachis andrei Emery, 1921 : 22, figs 1a, b, c. Holotype ♀, CAMEROUN (*L. Conradt*) (probably in MCSN, Genoa).

This species is known only from the female and only from the type collection. Emery gives TL 7–8, HL 1·8, HW 1·6 (width measured behind the eyes).

On the whole the species is very closely related to, and may in fact prove to be inseparable from *decemdentata*. The following comparisons will separate the females of the two species:

andrei	*decemdentata*
Eyes in front of midlength of head.	Eyes behind midlength of head.
Posterior pair of petiolar teeth spiniform, as long as dorsolateral pair.	Posterior pair of petiolar teeth dentiform, notably smaller than dorsolateral pair.
Virtually no pubescence except on legs.	Pubescence sparse but distinct everywhere.

It will not be possible to decide the true status of *andrei* until large series of *decemdentata* females have been studied and an investigation of the variability of the characters mentioned above has been made, or until *andrei* workers are found.

From the specimens of *decemdentata* seen by the present author the situation seems to call for the retention of *andrei* as a good species.

Polyrhachis asomaningi **sp. n.**

(Text-figs 44, 53)

Holotype worker. TL 5·9, HL 1·29, HW 1·07, CI 80, SL 1·40, SI 130, PW 1·22, MTL 1·37.

Mandibles with five teeth; the anterior clypeal margin with a small, shallow median concavity. Eyes strongly convex, the sides of the head in front of the eyes shallowly convex and converging anteriorly. Behind the eyes the sides form a blunt angle with the shallowly convex occipital margin. Pronotum and mesonotum strongly marginate laterally, the propodeum more weakly so; the margination interrupted at the sutures. Pronotum armed with a pair of broad, flat, triangular spines whose outer edges form a continuous convexity with the lateral marginations of the segment, which incurve strongly to the promesonotal suture. In dorsal view the lateral marginations of the mesonotum are convexly arcuate, those of the propodeum about parallel. Pronotum and mesonotum gently transversely convex dorsally, the propodeum more sharply so, armed posteriorly with a pair of small upcurved spines. Declivity of propodeum strongly concave. Promesonotal suture distinct, weakly arched; metanotal groove broad and deeply impressed. Petiole armed with two pairs of spines, the dorsal pair somewhat shorter than the laterals which are directed outwards and weakly upwards and backwards. Anterior face of first gastral segment concave, to receive the convex posterior surface of the petiole.

Head, dorsal surfaces of body and the appendages with abundant long, off-white, erect hairs. Pubescence long, greyish, very sparse.

Clypeus very finely reticulate-rugose, more coarse on the sides of the median portion than on the centre. Sides of head reticulate-rugose, the dorsum longitudinally rugose with only a few transverse rugae. Dorsum of pronotum as dorsum of head, the longitudinal rugae predominating except on the lateral portions where a rugoreticulum is apparent. Dorsal surfaces of mesonotum and propodeum with a disoriented rugoreticulum which is also present, though finer, on the anterior surface of the petiole. The sides of the alitrunk more finely reticulate-rugose. Propodeal declivity finely rugose, more shiny than the dorsum. Gaster coarsely and densely reticulate-punctate.

Colour black, dull, the gaster and propodeal declivity dully shining. Apical funicular segments yellowish brown.

Paratypes as holotype but with the following range of dimensions:

TL 5·4–5·9, HL 1·22–1·34, HW 1·07–1·11, CI 79–86, SL 1·37–1·45, SI 128–130, PW 1·22–1·29, MTL 1·37–1·45. (6).

Holotype worker, GHANA : Eastern Region, Mt Atewa, primary forest, by pyrethrum knock-down, sample A 12/6, 25.vii.1969 (*D. Leston*) (BMNH).

Paratype workers. GHANA : 2, Eastern Region, Mt Atewa, primary forest by pyrethrum knock-down, sample A 12/6, 25.vii.1969 (*D. Leston*) (BMNH); 2, same data as holotype but 23.vii.1969, samples A 7/3, A 7/4 (*D. Leston*) (UG, Legon; BMNH); 2, same data as holotype but 27.vii.1969, samples A 8/4, A 8/5 (*D. Leston*) BMNH).

An arboreal, forest-dwelling species closely related to *fissa* and its allies but separated from them by the presence of long, erect hairs standing out from the antennal scapes. Also characteristic of the species is the sculpturation, which is coarser and less organised than in others of the complex where it tends to form organised longitudinal or transverse rugae or striae on the entirety of the dorsal alitrunk.

Polyrhachis concava E. André

(Text-figs 1, 2, 33)

Polyrhachis concava E. André, 1889 : 218. Holotype worker, SIERRA LEONE (MNHN, Paris).

Worker. TL 6·8–7·6, HL 1·85–1·92, HW 1·29–1·37, CI 69–74, SL 2·29–2·40, SI 172–180, PW 1·00–1·18, MTL 2·37–2·55. (28 measured.)

Anterior margin of clypeus arcuate and entire. Sides of head in front of eyes shallowly but distinctly concave, slightly narrower than immediately behind the eyes. Sides of head behind the eyes rounding into the extremely convex occipital margin. Eyes in full face view appearing convex but in profile or postero-dorsal view it can be seen that the side of the head bordering the ventral margin of the eye is raised and extended to form a blinder, which appears to obscure the ventral margin of the eye, giving it a reniform outline. Dorsum of alitrunk transversely concave, the propodeum much more strongly so than the pronotum. Alitrunk marginate throughout its length, interrupted only at the sutures. The marginations of the constituent segments projecting and flange-like, more strongly so on the propodeum than on the pronotum. Pronotum armed with a pair of spines, propodeum with a pair of upcurved teeth of variable length, usually quite small but occasionally long and spine-like. Promesonotal suture distinct; metanotal groove impressed. Petiole with a pair of very long dorsal spines, divergent and curving backwards over the gaster in profile, and with a pair of short upcurved spines laterally, of variable length. Anterior face of first gastral segment vertical, not concave in the middle of the face.

Erect hairs present only on anterior clypeal margin and apex of gaster. Pubescence yellowish to pale golden in colour, densest on the alitrunk where it hides the sculpturation, less dense on the head and gaster.

Sculpturation everywhere of a fine superficial reticulation, finer on clypeus than on remainder of head.

Female as worker but on the alitrunk only the propodeum is concave between the two small, obtuse teeth found in this caste. Propodeum strongly marginate (After Forel, 1916 : 448).

The distinctive form of the eye immediately separates this species from all others of the *militaris* group in the Ethiopian region. A similar eye structure is known from some species of the Indo-Malayan region and in the subgenus *Hemioptica* Roger. André did not mention the character in his original description, nor did Wheeler (1922*a*) when comparing *concava* to *aerope*, but attention was drawn to it by Emery (1925 : 204) in his characterisation of the *abrupta* Mayr group of the subgenus *Myrma*.

Apart from the fact that the species is arboreal, nothing is known of its habits. Wheeler (1922*a* : 265) records that the species has been found in the stomachs of toads and pangolins.

MATERIAL EXAMINED.

GHANA : Tafo (*B. Bolton*); Mt Atewa (*D. Leston*). CONGO (KINSHASA) : Solon (?); Congo da Lemba (*R. Mayné*); Kunungu (*H. Schouteden*); Brabanta, Basongo (*P. Henrard*); Yangambe (*P. Henrard*); Ituri, Plaine d'Odongo (*A. Collart*); Stanleyville (*A. Collart*); Mayumbe, Kuni (*A. Collart*); Bas-Uele (*G. F. de Witte*); Pawa Region (*M. Reitter*); Uele, Dingila (*H. J. Bredo*); Ituri, Masua (*A. Collart*); Ituri, Genge, Nizi (*A. Collart*); Mayumbe (*R. P. Vanderyst*).

Also recorded from Sierra Leone (type data), Cameroun, Gabon, and Congo (Brazzaville).

Polyrhachis cornuta Stitz

(Text-figs 9, 41)

Polyrhachis cornuta Stitz, 1910 : 150. Holotype worker, CONGO (KINSHASA) : Kuako, Kimpoko (*Buttner*) (MNHU, Berlin) [examined].

Worker. TL 5·6, HL 1·42, HW 1·16, CI 82, SL 1·60, SI 138, PW 1·20, MTL 1·58.

Anterior clypeal margin arcuate and entire. Eyes convex, large and prominent. Sides of head in front of eyes more or less straight, somewhat convergent anteriorly. Behind the eyes the sides of the head almost straight, meeting the shallowly convex occipital margin almost in a right-angle. The eye itself is set in a somewhat impressed area upon the side of the head. Alitrunk marginate laterally throughout its length, the marginations interrupted at the sutures. Pronotum armed with a pair of broad, flattened, subtriangular spines; the propodeum with a pair of minute teeth. Promesonotal suture well developed; metanotal groove distinct and impressed. Dorsal surfaces of the constituent sclerites of the alitrunk convex. Petiole with a pair of short erect dorsal spines and an enormously developed pair of lateral horns which curve upwards, outwards and backwards around the base of the first gastral segment. These lateral spines are extremely thick at the base and taper apically. Anterior face of the first gastral segment concave medially.

All dorsal surfaces of the head and body with numerous long, erect hairs, which are however absent from the antennal scapes. Pubescence very fine and sparse, greyish, densest on the sides of the alitrunk and on the gaster.

Clypeus and gaster finely and densely superficially reticulate. Head, dorsum and sides of alitrunk, and anterior face of petiole longitudinally striate-rugose, more faintly so on the petiole than elsewhere.

Black, with legs, mandibles and apical six segments of the antennal funiculus brown or yellow-brown.

As stated by Stitz in the original description the structure of the petiole in this species is its most distinguishing character. The petiole form and shape of the head ally this species very closely to *phidias*, whilst the overall build and sculpturation places the species firmly in the *fissa* complex of the *militaris*-group. Differences from *phidias* include the sculpturation and the smaller size of that species.

Polyrhachis decellei sp. n.

(Text-figs 46, 54)

Holotype worker. TL 7·8, HL 1·64, HW 1·18, CI 72, SL 2·14, SI 181, PW 1·02, MTL 2·20.

Anterior clypeal margin arcuate, with a small, shallow impression medially. Head broadest in front, the sides convex in front of the eyes; the latter very convex and protuberant. Sides of head behind the eyes rounding immediately into the convex occipital margin. Dorsum of pronotum very shallowly transversely concave, almost flat; mesonotum similar but the propodeal dorsum shallowly convex medially. Alitrunk marginate on each side throughout its length, the margination interrupted at the sutures. Pronotum armed with a pair of long, acute spines, the outer edges of which are continuous with the pronotal marginations. Propodeum with a pair of small but acute teeth. Promesonotal suture distinct; metanotal groove well developed and impressed. In side view the propodeal margin arises almost vertically from the metanotal groove, passes through a convex curve and then slopes quite steeply backwards to the propodeal teeth. In dorsal view the marginations of the pronotum and mesonotum converge posteriorly whilst those of the propodeum are slightly convex in outline and gradually diverge posteriorly. Petiole armed with a pair of long dorsal spines, divergent and recurving dorsally over the base of the first gastral segment. Lateral armament of petiole a pair of short, triangular, acute teeth. Anterior face of first gastral segment not concave medially.

Erect hairs present only on the anterior clypeal margin and the gastral apex, and with a single pair of hairs arising from the dorsum of the head, on a level with the posterior borders of the eyes. In the holotype the left hair of the pair is missing but the pit showing the former site of its insertion is distinct. Pubescence quite dense on the alitrunk, with a weak golden or yellowish tinge dorsally, more greyish in colour on the sides. Gastral pubescence exceedingly fine, short and sparse.

Entire body, including head, finely and densely reticulate, dully shining. Colour black, the legs a very dark brown-black.

Paratype worker as holotype, somewhat smaller; TL 7·4, HL 1·60, HW 1·16, CI 72, SL 2·10, SI 181, PW 1·02, MTL 2·12. Pubescence of alitrunk rather more dense and golden than in the holotype; the propodeal teeth slightly more pronounced.

Holotype worker, GHANA : Eastern Region, Begoro, 10.vi.1968 (*C. A. Collingwood*) (BMNH).

Paratype worker, GHANA : Eastern Region, Bunso, 7.vii.1969 (*D. Leston*) (UG, Legon).

This medium-sized, forest zone species is closely related to *concava* and its immediate allies, rather more distantly so to *alluaudi* and the smaller species similar to it. The nearest related species is *esarata*, from which it may be separated by the shape of the eye, the construction of the petiole, the outline of the propodeal marginations and the shape of the anterior clypeal margin. With *esarata* the present species shares a single character not found in any other member of the complex of species centring on *concava*, namely the presence of a pair of erect hairs upon the dorsum of the head.

Polyrhachis decemdentata E. André

Polyrhachis decemdentata E. André, 1889: 219. Holotype worker, SIERRA LEONE (MNHN, Paris).

Polyrhachis decemdentata var. *fernandensis* Forel, 1901*a* : 377. Holotype worker, EQUATORIAL GUINEA : Fernando Po (probably in MHN, Geneva). **Syn. n.**

Polyrhachis decemdentata var. *flavipes* Stitz, 1910 : 149. Syntype workers and ♀♀, CAMEROUN : Victoria (*Buchholz*) (probably in MNHU, Berlin). **Syn. n.**

Polyrhachis decemdentata var. *gustavi* Emery, 1921 : 22. Syntype ♀♀, EQUATORIAL GUINEA : Fernando Po (probably in MCSN, Genoa). **Syn. n.**

Polyrhachis decemdentata subsp. *tenuistriata* Menozzi, 1932 : 114. Syntype workers, UGANDA : Bugala (*E. Bayon*) (probably in Istituto di Entomologia, Bologna). **Syn. n.**

Worker. TL 4·7–6·7, HL 1·18–1·59, HW 1·07–1·48, CI 87–93, SL 1·15–1·55, SI 105–114, PW 0·85–1·33, MTL 1·22–1·74. (28 measured.)

Anterior clypeal margin arcuate, convex to shallowly concave medially. Eyes convex, moderately protuberant. Sides of head in front of eyes convex and convergent anteriorly; behind the eyes the sides round into the very shallowly convex occipital margin. Alitrunk marginate throughout its length, the margination interrupted at the sutures. All dorsal surfaces transversely convex, the propodeum somewhat more markedly so than the pronotum or mesonotum. Pronotum armed with a pair of broad, flattened, triangular spines; propodeum with a pair of short upcurved spines or teeth. Promesonotal suture distinct; metanotal groove developed and deeply impressed. Petiole with six spines or teeth; a lateral pair of long spines directed upwards and weakly backwards, a dorsal pair of broad, acute teeth which are usually short and dentiform but occasionally projecting as distinct spines, and a pair of teeth or short spines situated below and behind the long lateral spines and directed backwards and upwards. The last mentioned pair are sometimes reduced to small tubercles. Anterior face of first gastral segment concave medially.

All dorsal surfaces of the body and appendages with numerous erect hairs, white or yellowish in colour. Pubescence sparse, grey or off-white.

Sculpturation variable, usually with the head and the dorsum of the alitrunk finely longitudinally rugose or striate-rugose with shining or weakly reticulate-punctate interspaces. Sometimes the sculpture is very much effaced or more distinctly reticulate-rugose, especially on the dorsum of the alitrunk. On the propodeal dorsum the rugae may be transverse or, in some individuals, diagonal. Gaster usually finely and densely reticulate-punctate but with all intergrades to the possession of a fine superficial reticulation only. Colour black, often entirely so but sometimes the legs (especially the fore tibiae) lighter, brown or yellow-brown.

Female as worker, answering to the above description except in the structure of the alitrunk. The pronotal spines are reduced and the sculpturation of the scutellar dorsum is usually distinctly reticulate-rugose. The female closely resembles *andrei*, the characters for their separation are given under that species. Alate females of *decemdentata* have been recorded as follows. GHANA : October. NIGERIA : March, July, August. SIERRA LEONE : August. UGANDA : August, December.

The varieties and subspecies noted in the synonymy were mostly founded upon quite trivial variations in colouration or in sculptural intensity. Some of the females constituting the variety *gustavi* had the dorsal petiolar teeth obtuse and little projecting. That the sculpturation of the species is variable was noted by Emery (1921 : 21), who pointed out that *fernandensis* differed from the 'typical' only in the gastral sculpturation, a point in fact previously recorded by Santschi (1909 : 396), who had stated that it was shiny and finely reticulate. The var. *flavipes* had the femora yellow to brown in colour, and the subspecies *tenuistriata* had sparser pubescence and rather effaced longitudinal rugulate sculpturation.

The material examined in the course of the present study embraces all the described infraspecific forms, with numerous intermediates, and places the previously described forms well within the limits of variation of the species. The limits in sculptural reduction are perhaps best shown by a female in the BMNH collection, from Uganda. In this specimen the mesoscutum is devoid of sculpturation except for a faint superficial reticulation; the scutellum and the propodeal dorsum are weakly reticulate-rugose and the whole body is very shiny.

The nests of *decemdentata* are usually constructed in rotten parts of standing trees, often a considerable distance above the ground. Branches which have previously suffered termite attack appear to be preferred, but the species has been recorded in Ghana nesting in the stump of a fallen cocoa tree. The species is arboreal and very rarely comes to ground level; it is apparently tolerated in trees by dominant species of the genera *Oecophylla* F. Smith and *Crematogaster* Lund. The presence of six spines or teeth on the petiole distinguishes this species from all others in the regional fauna except *andrei*, which is known only from the female.

MATERIAL EXAMINED.

SIERRA LEONE : Njala (*E. Hargreaves*). GHANA : Aburi (*P. M. Room*); Tafo (*C. A. Collingwood*); Bechem (*C. A. Collingwood*). NIGERIA : Gambari (*B. Bolton*); Ile-Ife (*J. T. Medler*). CAMEROUN : Meyo (*C. A. Collingwood*). UGANDA : Kampala (*M. Grabham*); Kawanda (*H. S. Darling*). CONGO (KINSHASA) : Eala (*P. Staner*).

Also recorded from Guinea, Ivory Coast, Equatorial Guinea (type data), and Congo (Brazzaville).

Polyrhachis esarata sp. n.

(Text-figs 45, 55)

Holotype worker. TL 7·2, HL 1·56, HW 1·20, CI 77, SL 1·91, SI 159, PW 1·08, MTL 1·92.

Anterior clypeal margin arcuate and entire. Eyes convex and protuberant. Sides of head in front of the eyes almost straight, very gently convex and somewhat convergent anteriorly. Behind the eyes the sides of the head round into the broadly convex occipital margin. Alitrunk marginate throughout its length, interrupted only at the sutures. Dorsal surfaces of pronotum and mesonotum flat, dorsal surface of propodeum convex. Pronotum armed with a pair of spines, the outer edges of which are continuous basally with the margination of the segment. Propodeum with a pair of minute, tuberculiform teeth. Promesonotal suture distinct; metanotal groove developed and impressed. In dorsal view the marginations of the alitrunk are convergent posteriorly on the pronotum and mesonotum. On the propodeum the marginations are convex, broadest at about the midlength of the segment and converging anteriorly towards the metanotal groove and posteriorly towards the propodeal teeth where they are terminated. Petiole with a dorsal pair of spines and a lateral pair of small teeth. The dorsal spines are weakly divergent and somewhat back-curved. Anterior face of first gastral segment not concave medially.

Erect hairs present on the anterior clypeal margin and the gastral apex, and with a single pair on the dorsum of the head, situated on a level with the posterior borders of the eyes, behind the posteriormost extension of the frontal carinae. Pubescence dense on alitrunk, long, with a pale brassy tint on the dorsum, rather more greyish on the sides. On the head, gaster and appendages the pubescence very short, fine, greyish in colour and moderately dense.

Sculpturation everywhere of a fine, dense reticulation.

Colour black, the legs, especially the tibiae, very dark brown-black. Palpi and extreme tip of apical funicular segment of antenna yellow-brown.

Holotype worker, GHANA : Eastern Region, Bunso, by pyrethrum knock-down (sample B.3/8), 7.vii.1969 (*D. Leston*) (BMNH).

This species, a member of the complex of species surrounding *concava* and including *alluaudi* and its allies, is closest related to *decellei*. It may immediately be separated from *concava* and the more 'normal' forms in the complex by the presence of a single pair of erect hairs on the dorsum of the head. This character is shared only with *decellei*, from which it can be separated by the shape of the anterior clypeal margin, the construction of the petiole and the outline shape of the propodeal margination seen in dorsal view.

Polyrhachis fissa Mayr

(Text-figs 5, 26)

Polyrhachis fissus Mayr, 1902 : 301. Syntype workers and ♀, CAMEROUN : Victoria (*Buchholz*) (NM, Vienna).

Polyrhachis bequaerti Wheeler, 1922*a* : 267, fig. 76. Syntype workers, CONGO (KINSHASA) : Utiasiki, between Lubutu and Kirundu (*J. Bequaert*) (MCZ, Boston) [examined]. **Syn. n.**

Polyrhachis fissa subsp. *ugandensis* Arnold, 1954 : 294, figs 6, 6a. Holotype worker, UGANDA : Entebbe, Botanical Gardens (*G. Arnold*) (NMR, Bulawayo). **Syn. n.**

Worker. TL 5·2–6·3, HL 1·29–1·74, HW 1·26–1·64, CI 94–97, SL 1·33–1·74, SI 100–115, PW 0·96–1·22, MTL 1·26–1·59. (20 measured.)

Anterior clypeal margin arcuate, entire. Eyes convex, the sides of the head in front of the eyes straight to weakly convex, converging anteriorly; occipital margin convex. Alitrunk marginate throughout its length, the margination interrupted at the sutures. Pronotal spines acute, subtriangular in shape, very broad at the base; their lateral margins more or less straight and continuous with the pronotal margination. Pronotum usually transversely convex on the disc, passing through a slight concavity at the bases of the spines. Propodeum armed with a pair of short, upcurved teeth. Promesonotal suture distinct, transverse, very slightly or not at all arched. Metanotal groove well developed and deeply impressed. In lateral view the propodeum rises almost vertically from the groove, passes through a narrow convexity above and then slopes strongly towards the spines. In dorsal view the propodeal marginations diverge posteriorly. Petiole with four spines, usually of almost equal length, the dorsal pair slightly shorter than the lateral. All the spines are curved posteriorly. Middle of anterior face of first gastral segment concave to receive the convex posterior face of the petiole.

Standing hairs usually present on all dorsal surfaces but may be absent from the first gastral tergite and are always absent from the antennal scapes. At the extreme apex of the scape a few hairs are usually present, projecting in line with the long axis of the shaft. Hairs white to grey-white; pubescence greyish, very sparse.

Sculpturation variable. Clypeus, head in front of the eyes, and the gaster finely superficially reticulate and polished. Head above and behind the eyes either similar to the above or finely and densely longitudinally striate-rugose. Dorsum of the pronotum and mesonotum longitudinally striate-rugose, varying in intensity from finely to deeply incised. Dorsum of propodeum transversely striate, the striae deeply incised and distinct.

Colour black, the gaster distinctly shining. Antennal funiculae usually lighter, brown to yellow-brown. Legs varying from black to yellow-brown, often with the tibiae lighter in colour than the femora.

Female as worker, with the usual differences associated with the caste. The spines of the pronotum and petiole, and the propodeal teeth tend to be less well developed than in the worker. Alate females have been recorded as follows, GHANA : June, November.

Arnold's subspecies *ugandensis*, which was described from a single specimen, is one of the more lightly sculptured individuals of this species.

In the original description of *bequaerti*, Wheeler stated that it 'clearly belongs to the group comprising *fissa* Mayr and *monista* Santschi, but is quite distinct from any of the described species'. The syntypes of *bequaerti* were compared to a specimen of *fissa* determined by Mayr and were found to be indistinguishable. Comparisons of other specimens of *fissa* both to the types and the original description of *bequaerti* failed to show any grounds upon which the two could be separated.

The closest relative of this species is *lauta*, from which it may be distinguished by the direction of the propodeal sculpturation and the presence of a facial groove and pit in *lauta*, which is situated close to the antennal insertion.

P. fissa is arboreal, workers usually being found running on the trunks of trees. The species appears to be restricted to forests and according to Wheeler (1922*a* : 269) the nests are composed of vegetable particles and silk and are constructed between two adjacent leaves, which are gummed together to form the walls of the nest.

MATERIAL EXAMINED.

GHANA : Nswam (*P. M. Room*); Aburi (*P. M. Room*); Tafo (*B. Bolton*), (*C. A. Collingwood*); Asamankese (*P. M. Room*); Tafo, long series without name of collector; Korangang (*J. Paine*). CAMEROUN : no loc. (*G. Mayr* coll.).

Also recorded from Congo (Kinshasa) (type data), Uganda (type data), and Equatorial Guinea.

Polyrhachis gagates F. Smith

Polyrhachis gagates F. Smith, 1858 : 71, pl. 4, fig. 14. Holotype worker, SOUTH AFRICA : Natal, Durban (BMNH) [examined].

Polyrhachis gagates var. *congolensis* Santschi, 1909 : 399. Syntype workers, CONGO (BRAZZAVILLE) : Mandouga (*A. Weiss*) (NM, Basle) [examined]. **Syn. n.**

Polyrhachis nigriseta Santschi, 1909 : 399. Holotype worker, CONGO (BRAZZAVILLE) : Mindouli (*A. Weiss*) (NM, Basle) [examined]. **Syn. n.**

Polyrhachis nigriseta var. *clariseta* Santschi, 1909 : 400. Syntype workers, CONGO (BRAZZAVILLE) : Mandouga (*A. Weiss*) (NM, Basle) [examined]. **Syn. n.**

Polyrhachis gagates subsp. *indefinita* Forel, 1913*c* : 349. Syntype workers, CONGO (KINSHASA) : Katanga, Sankisia (*J. Bequaert*) (MRAC, Tervuren) [examined].

Polyrhachis gagates subsp. *obsidiana* Emery, 1921 : 21. Holotype worker, GABON (probably in MCSN, Genoa). **Syn. n.**

Polyrhachis gagates subsp. *indefinita* var. *acheron* Arnold, 1924 : 746. Holotype worker, RHODESIA : Bulawayo, Hillside, 27.vi.1915 (*G. Arnold*) (BMNH) [examined]. [Name not available].

Worker. TL 11·3–13·2, HL 2·66–3·03, HW 2·04–2·40, CI 76–81, SL 3·34–3·56, SI 147–160, PW 1·59–1·74, MTL 3·59–4·08. (30 measured.)

Mandibles with five teeth; anterior clypeal margin entire, in profile the clypeus is usually convex above and concave below so that the anterior margin projects over the basal borders of the mandibles as a weak shelf. Eyes well developed, flat to weakly convex. Pronotal spines long, acute and usually somewhat incurved; the propodeal armament consisting of a pair of upcurved teeth of variable shape and size, sometimes represented by a pair of blunt, dorsoventrally flattened tubercles. Alitrunk marginate laterally throughout its length, broken at the promesonotal suture and the metanotal groove, and often notched or concave on the sides of the mesonotum. Marginations of alitrunk not produced upwards or outwards as flanges or lamellae; all dorsal surfaces of alitrunk flat to transversely gently convex. Petiole with four spines, of which the dorsal pair are always several times longer than the laterals. The dorsal pair may be long and broadly sinuate, following the contours of the anterior face of the gaster, or shorter and merely recurved. The lateral pair of petiolar spines are short and thick or reduced to a pair of teeth.

Erect hairs present on the head and gaster and present on the dorsum of the pronotum. Hairs always absent from the sides of the head between eye and ventrolateral margin, dorsal surfaces of mesonotum and propodeum; usually also absent from scale of petiole. Pubescence everywhere sparse to absent, greyish or white in colour, never so dense as to render the underlying sculpture invisible.

Sculpturation variable. Clypeus usually with a fine, broken and partially effaced reticulo-rugulation overlying a superficial reticulation. Dorsum of head usually finely reticulate-rugose with a longitudinal direction. In a majority of cases the pronotum has weak, broken, irregular longitudinal rugae, sometimes with occasional weak transverse rugae linking those running longitudinally. Rarely the sculpturation is of fine, dense rugulation with scattered small punctures in the interspaces. Mesonotum and propodeum similar to the pronotum but the sculpturation usually somewhat more coarse. Very rarely the entire dorsum of the alitrunk with a fine dense rugoreticulum. Gaster with an extremely fine superficial reticulation, the edges of component reticulae scarcely or not at all raised, so that the surface is smooth. Colour black, head and alitrunk dull or shining, the gaster always highly polished.

Female as worker, larger, the lateral marginations of the alitrunk distinct only on the propodeum. Spines of pronotum and scale of petiole reduced. Sculpturation and distribution of erect hairs as in worker, but in one female in the BMNH collection the mesoscutum is as highly polished as the gaster, having the same superficial reticulation. Alate females have been recorded as follows, RHODESIA : July. SOUTH AFRICA : April.

As will be noted from the above description *gagates* is a variable species, as are its closest relatives *schistacea* and *militaris*, and some argument has ensued over the interpretation of their relationships, as discussed below and under *schistacea*.

In the rush to describe subspecies and varieties earlier this century *gagates* was equipped with four infraspecific names and thus came off reasonably well when compared to *militaris* or *schistacea*; but even amongst these four names there was confusion. The variety *congolensis* was erected by Santschi to include forms with rather more dense pubescence than was apparent in the type, although it should have been obvious even at that time that the pubescence was variable. Although the description of this variety made it clear that the species was *gagates*, Forel (1913*b* : 357) referred it to *schistacea* as race *congolensis* after explaining that he considered the two species (*schistacea* and *gagates*) to be synonymous. However, he did not formally synonymise one to the other but stated, 'I therefore think that *gagates* should be reunited as a race of *schistacea* – or vice versa – as both species date from 1858'. In the same year, however, he described *gagates* subsp. *indefinita*.

This led Wheeler (1922*b* : 996, 1001) to refer to *gagates* subsp. *indefinita* but *schistacea* subsp. *congolensis* in his check-list. These two infraspecific names were shown to be synonymous by Santschi (1924 : 224) in the same year that Arnold described the variety *acheron* for forms with effaced sculpturation and more convex eyes than were found in 'typical' *gagates* or in the subspecies *indefinita*.

The remaining infraspecific name, *obsidiana*, was given as a five-line description of a single worker from Gabon which was smaller than usual and with finer, less distinct sculpturation. The whole of the dorsum of the alitrunk, petiole and head were shiny and almost devoid of pubescence, the head narrower than usual with the eyes convex. This description also fits *acheron* very well.

P. nigriseta was originally described as a distinct species but Forel (1913*c* : 349) thought that '*nigriseta* is perhaps a race of *gagates* and not a distinct species'. However, in the same year (Forel, 1913*b* : 357) he referred to *nigriseta* as a race of *schistacea*. In the following years Santschi (1914*a* : 140) continued to treat *nigriseta* as a good species whilst Wheeler (1922*b* : 1002) followed Forel and reduced it to a subspecies of *schistacea*. Forel's first conjecture was, however, correct as the present investigation has shown *nigriseta* to be a straight synonym of *gagates*, of the form in which the sculpturation is reduced everywhere to a fine superficial reticulation and in which the eyes are convex. The variety *clariseta* is a very ordinary *gagates*, with the eyes only moderately convex and the sculpturation reduced.

At the present time *gagates* may be considered as a reasonably distinct, variable species but its relationships to other members of the complex, especially *militaris* and *schistacea* stand in need of further investigation than is possible within the scope of the present work. Suffice to say that variation within the species occurs chiefly in degree of convexity of the eyes, density of pubescence, intensity of sculpturation, location of erect hairs and in details such as length of petiolar and propodeal spines and the glossiness of the integument, which on the head and alitrunk may range from dull black to very shining. Intergrades between all the described infraspecific forms exist and individual variations may be seen in members of the same colony. A single worker from Kenya shows an eye shape and distribution of erect hairs more typical of *schistacea* but in all other respects resembles *gagates*. This may represent a genuine hybrid or may be an extreme individual variant.

Ground nesting ants inhabiting savannah and rather arid regions, more rarely penetrating into scrub forest. The nests are described by Wheeler (1922*a* : 262) as being excavated directly into a sandy substrate at the base of a tuft of grass, the entrance hole being surrounded by a wide crater of discarded sand grains. Arnold (1924 : 746) also notes that the species nests under rocks and that the entrance was 'surmounted by a wall of woven material, which also lined the first three or four inches of the gallery', a feature also noted by Wheeler.

MATERIAL EXAMINED.

RWANDA : Kibungu (*R. Verhulst*); Nyanza (*L. Burgeon*). CONGO (KINSHASA) : Gandaljika (*P. de Francquen*); Lomami, Lusuku (*P. Quarre*); Kasongo, Kamato (*P. L. G. Benoit*); Mayumbe, Tshiobo N'Goy (*A. Collart*); Kinshasa (*A. Collart*); Kunungu (*H. Schouteden*); Urundi, Bururi (*F. Francois*); Mayidi (*P. van Eyen*); Kwango, Dengo (*Vleeschouwers*). ANGOLA : Cabinda (*Ph. Allaer*). KENYA : Diani

Beach (*N. L. H. Krauss*); Merifano (*Gregory*). TANZANIA : Zanzibar, Chukwani (*E. S. Brown*); Zanzibar, Chakwa (*E. S. Brown*); Mpala (*Oberthur*); Tembwe (*H. Schouteden*). MALAWI : Mlanje Boma (*S. A. Neave*); Between Mangoche and Chikala Boma (*S. A. Neave*); Nyika Mts (*A. Whyte*); Lingadzi (*W. A. Lamborn*). RHODESIA : Bulawayo (*G. Arnold*); Selukwe (*P. E. V. Zealley*). MOZAMBIQUE : Delagoa (*Liengme*). SOUTH AFRICA : Natal, Durban (*L. B. Cooper*); Durban (*F. B. Marley*); Wonderboom (*T. D. A. Cockerell*); Shiluvane (*Junod*).

Also recorded from Uganda and Zambia.

Polyrhachis laboriosa F. Smith

(Text-fig. 24)

Polyrhachis laboriosa F. Smith, 1858 : 72, pl. 4, figs 21, 22. Holotype worker, SIERRA LEONE (*D. F. Morgan*) (BMNH) [examined].

Polyrhachis laboriosa var. *architecta* Santschi, 1924 : 224. Syntype workers, CONGO (KINSHASA) : Kondue (*E. Luja*) (probably in NM, Basle). **Syn. n.**

Polyrhachis hortulana Arnold, 1955 : 735, fig. 3. Holotype worker, UGANDA : Entebbe, Botanical Gardens (*G. Arnold*) (NMR, Bulawayo) [examined]. **Syn. n.**

Worker. TL 10·2–11·6, HL 2·15–2·25, HW 1·56–1·81, CI 71–79, SL 2·85–3·34, SI 182–196, PW 1·19–1·36, MTL 3·26–4·11. (30 measured.)

Anterior clypeal margin arcuate, entire, the clypeus with a distinct median, longitudinal carina. Eyes strongly convex, the sides of the head behind the eyes strongly convergent to a short convex occipital margin. Alitrunk marginate throughout its length, interrupted by impressions at the sutures. Pronotum and propodeum weakly concave transversely, the former armed with a pair of long acute, divergent spines, the latter with a pair of small teeth. Promesonotal suture distinct, metanotal groove impressed. In profile the propodeum rises abruptly from the metanotal groove, behind which it slopes convexly to the propodeal teeth. Petiole armed with a single pair of spines, set at the dorsolateral corners of the scale, weakly divergent, their apices strongly hooked, directed posteriorly and somewhat laterally.

All dorsal surfaces of head, alitrunk and gaster with numerous erect hairs, varying in colour from grey to golden-yellow. Pubescence dense, mostly hiding the sculpturation on the gaster, usually grey on the head and alitrunk, golden or bronzy on the gaster, but sometimes the pubescence of the pronotal dorsum is also yellow or golden.

Head reticulate-punctuate except on the vertex where the sculpturation is of longitudinal rugulation. Pronotal dorsum superficially reticulate-punctate, the mesonotum and propodeum usually more coarsely sculptured, rugulose or more strongly reticulate-punctate; the sculpturation of the pronotum may be concealed by the pubescence. Gaster finely reticulate-punctate, mostly hidden by the dense pubescence.

Female as worker, larger, with the marginations of the alitrunk less distinct. Pronotal spines and propodeal teeth reduced, the latter often to a pair of tubercles. Alate females have been recorded as follows, GHANA : July, September. CONGO (KINSHASA) : March, August.

Santschi's variety *architecta* had the petiolar spines more remote from each other than is usual and the pubescence shorter and greyish yellow on the alitrunk. The distance between the spines is in fact variable and *architecta* must be regarded as nothing more than a trivial variation, well within the limits of the species. The type and only known specimen of Arnold's *hortulana* is separable from *laboriosa* only in its greyish gastral pubescence and the very low number of erect hairs on the dorsal surfaces of the body. In fact these are restricted to a single one on the pronotum and propodeum and are absent from the dorsal surface of the gaster. Closer examination revealed that numerous hairs had been lost and that the anterior face of the first gastral segment was about as hairy as in other members of the species. It was concluded that the specimen was most probably an early-brood worker from a young colony. This conjecture is supported by the small size of the individual (lowest in the range given above) and the apparent deformity of the petiolar spines noted by Arnold. The presence of grey gastral pubescence may be attributed to the same cause, as may the reddish brown tinge of the gastral integument, which is noticeable in other teneral forms in the species.

A member of the *militaris*-group, *laboriosa* is easily separated from all other species by the unique form of the petiole.

The nests of this species, common in West Africa, are well known and consist of a mixture of vegetable fragments and small twigs bound together by silk and fungal hyphae and adherent to the undersides of leaves or situated at the fork of small branches. Form and construction of the nest have been discussed many times, for example by Wheeler (1922*a* : 259), Santschi (1909 : 393) and Collart (1932). *P. laboriosa* appears to be restricted to forested areas. When disturbed the workers curve the gaster under the alitrunk to eject formic acid, and also tap the gaster upon the substrate, making a rattling noise when performed by a number of workers together. If individual arboreal foragers are disturbed they tend to release their grip on the bark and fall into the undergrowth.

MATERIAL EXAMINED.

SIERRA LEONE : no loc. GHANA : Bibianaha (*Spurrel*); Ankasa Forest Reserve (*O. W. Richards*); near Kumasi (*B. M. Gerard*); Tafo (*C. A. Collingwood*); Bawdna (*N. D. Jago*); Adeiso (*P. M. Room*). NIGERIA : Itu (*W. A. C. Cockburn*); Lagos (*G. Strachan*); Gambari (*B. Bolton*). ANGOLA : no loc. (*Welwitsch*); Vale de Loge (*A. P. Ferrao*); Cabinda (*Ph. Allaer*). CONGO (KINSHASA) : Stanleyville (*A. Collart*); Kwamouth (*H. Schouteden*); Flandria (*R. P. Hulstaert*); Eale-Bokatola-Bikoro (*J. Staner*); Eala (*H. J. Bredo*); Butu (*R. P. Hulstaert*); Sankuru, Gandaljika (*P. de Francquen*); Equateur, Bokamu (*R. P. Lootens*); Mayumbe, Tshenge (*A. Collart*); Tshuapa, Bokungu (*Dupuis*); Mayidi (*P. van Eyen*); Eala (*P. Staner*); Thysville (*P. Basilewsky*); Uele (*R. P. H. L. Bertels*); Haut-Uele (*L. Burgeon*); Leopoldville (*A. Tinant*); Eala (*J. Vrydagh*); Likimi (*A. Collart*); Leopoldville (*R. P. Hulstaert*); Ituri, Masua (*A. Collart*); Lukobla (*H. Lebeau*); Ubangi, Bumba (*J. Eugene*).

Also recorded from Ivory Coast, Togo, Cameroun, Equatorial Guinea, Congo (Brazzaville), and Uganda (type data).

Polyrhachis latispina Emery

Polyrhachis atalanta Wheeler, 1922*a* : 263, fig. 71. Holotype ♀, CONGO (KINSHASA) : Stanleyville [=Kisangani] (*Lang* and *Chapin*) (probably in MCZ, Boston). [Nom. preocc. (not *atalanta* Emery).]

olyrhachis latispina Emery, 1925 : 206. [nom. substit. for *atalanta* Wheeler.]

Polyrhachis iperpunctata Menozzi, 1942 : 181, fig. 4. Holotype worker, EQUATORIAL GUINEA : Fernando Po, Musola, 11.ix.1939 (*H. Eidmann*) (probably in Istituto di Entomologia, Bologna). **Syn. n.**

Polyrhachis iperstriata Menozzi; Eidmann, 1944 : 424. [lapsus.]

Worker. TL 9·4–11·2, HL 2·26–2·40, HW 1·88–2·12, CI 83–88, SL 2·30–2·44, SI 115–122, PW 1·58–1·76, MTL 2·48–2·52. (3 measured.)

Anterior clypeal margin arcuate and entire. Eyes convex, the sides of the head in front of the eyes convex and somewhat convergent anteriorly. Behind the eyes the sides round into the shallowly convex occipital margin. Alitrunk marginate throughout its length, the margination interrupted at the sutures. Pronotum armed with a pair of flattened triangular teeth; the propodeum with a pair of upcurved short spines between which runs a strongly arched transverse ridge separating the dorsum from the declivity. Promesonotal suture distinct; metanotal groove impressed. Petiole armed with four spines; the dorsal pair long, recurving over the base of the first gastral tergite and very broad at their bases. The lateral pair narrow, markedly shorter than the dorsals, somewhat upcurved. Anterior face of first gastral segment shallowly concave medially.

Head, body and appendages equipped with numerous fine, whitish, erect hairs; pubescence sparse, short and scattered.

Clypeus finely reticulate-punctate, overlaid by a loose rugosity. Head finely and densely longitudinally rugose, the spaces between the rugae finely reticulate-punctate. On the sides of the head the rugae are less regular and tend to form a rugoreticulum, especially below and behind the eyes. Dorsum of alitrunk sculptured as head, the sides predominantly reticulate-rugose but with some longitudinal rugulation on the pronotum and propodeum. Declivity of propodeum extremely finely reticulate and shining, forming a marked contrast to the heavily sculptured dorsum. Petiole transversely rugose on the lower part of its anterior surface, longitudinally so above and between the spines. First gastral tergite reticulate-punctate, overlaid by a fine, dense, longitudinal rugulation which tends to peter out on the posterior half of the segment. Colour black, with parts of the legs and extreme apex of funiculus brown or yellow-brown.

Female answering to the above description apart from the normal modifications of the alitrunk, but differing as follows;

1. Longitudinal rugosity everywhere tending to be coarser and less regular.
2. On the pronotum and mesoscutum the rugae appear to diverge from an anteromedian point. This is more pronounced on the pronotum and is accounted for by the foreshortening of the segment in this caste.
3. The fine longitudinal rugae of the first gastral tergite occupy approximately one-third of the length of the segment.
4. Dorsal petiolar spines shorter with respect to the laterals than in the worker.

Four specimens (one female) from two localities, kindly loaned to me by Dr J. Decelle of the Musée Royal de l'Afrique Centrale, Tervuren, have allowed the association of *latispina* with *iperpunctata*, the latter proving to be the worker caste of the former. The original descriptions of the two are sufficient to indicate synonymy, but Menozzi's figure of the head of *iperpunctata* is somewhat misleading. The figure given by Wheeler presents a more accurate representation of the head shape in this species.

Professor E. Mellini informs me that the holotype of *iperpunctata* could not be located in the Menozzi collection in the Instituto di Entomologia, Bologna.

Eidmann (1944 : 466) records the nesting site as follows. 'I found this [species] only a single time at our experimental area at Musola, where they were nesting in some hollow petioles of dead and fallen leaves of a tree fern. The gaps and openings in the inhabited stems were closed off with a coarse carton mass.' The species is a member of the *militaris* group, and Wheeler (1922*a* : 264) regarded it as closely related to *sulcata*. However, the construction of the propodeum, with its complete margination and transverse ridge between the spines separates it from the above species. It is probable that Wheeler based his assumption on the sculpturation, which appears similar in *latispina* to the original description of *sulcata*, but is so very different when the species are compared directly.

MATERIAL EXAMINED.

CONGO (KINSHASA) : Haut-Uele, Manda (*H. Schouteden*); Eala (*H. J. Bredo*).

Also recorded from Equatorial Guinea (type data).

Polyrhachis lauta Santschi

(Text-figs 6, 37)

Polyrhachis lauta Santschi, 1909 : 397, fig. 19. Holotype ♀, CONGO (BRAZZAVILLE) : Brazzaville (*A. Weiss*) (NM, Basle) [examined].

Polyrhachis lauta var. *localis* Forel, 1913*b* : 359. Holotype ♀, CONGO (KINSHASA) : Congo da Lemba (*R. Mayne*) (MRAC, Tervuren) [examined]. **Syn. n.**

Polyrhachis lauta var. *laeta* Emery, 1921 : 22. Syntype ♀♀, CAMEROUN (*L. Conradt*) (probably in MCSN, Genoa). **Syn. n.**

Worker (previously undescribed). TL 5·5–6·2, HL 1·29–1·62. HW 1·22–1·54, CI 94–95, SL 1·29–1·54, SI 100–106, PW 0·93–1·29, MTL 1·18–1·52. (6 measured.)

Anterior clypeal margin arcuate and entire; posterior clypeal suture very faint, almost invisible. A short, longitudinal, shallow groove terminating in a depression present close to the outer margin of the antennal socket. Eyes weakly convex, sides of head in front of eyes strongly convergent. Behind the eyes the sides rounding into the very broad and convex occipital margin. Alitrunk marginate throughout its length, interrupted only at the sutures. Promesonotal suture incised; metanotal groove deeply impressed. Pronotum armed with a pair of broad, flattened spines; propodeum with a pair of short, upcurved spines. Lateral marginations of the propodeum divergent posteriorly in dorsal view. Pronotal and mesonotal dorsa convex, the propodeum very similar in shape to that of *fissa*. In profile the anterior portion of the propodeum rises almost vertically from the metanotal groove, passes through a strong dorsal convexity and slopes steeply to the propodeal spines. Petiole with two pairs of spines, the lateral notably longer than the dorsal pair; the latter strongly recurved or hooked apically. Anterior face of first gastral segment concave medially.

Standing hairs sparse, present on the dorsum of the head, pronotum and mesonotum, absent from the antennal scapes, propodeum, petiole and first gastral segment.

Head and gaster very finely, superficially reticulate. Dorsal surfaces of alitrunk extremely finely, densely, longitudinally striate. Colour black, the apical funicular segments yellow-brown, the legs black or black-brown.

Female as worker, resembling it in all respects except for modifications associated with differences in caste. The propodeum in the female is strongly transversely concave between the spines in dorsal view. The entire body is sculptured with a fine superficial reticulation.

Two varieties of the female were described. The variety *laeta* was erected by Emery for specimens differing from the type by having oval eyes and the dorsal pair of petiolar spines less strongly recurved at their apices. The eyes of the type of the species were described as reniform by Santschi, but the emargination of the ventral border of the eye is so shallow that oval could also be a reasonably accurate term.

In *localis* the propodeal teeth were described as smaller and more obtuse than in the type, and the metanotal groove less deep. Comparison of the two types has shown that these are no more than individual variations.

Previous authors overlooked the presence of the facial pit and groove situated just lateral of the antennal socket, and this character coupled with the general body form, fine sculpturation and shape of petiolar spines linked the females to a series of *fissa*-like workers in the BMNH collection. The species is the closest known relative of *fissa*, differing from it by the presence of a facial groove, intensity and direction of sculpturation and form of petiolar spines.

MATERIAL EXAMINED.

GHANA : Tumu (*P. M. Room*). UGANDA : Tero Forest (*C. C. Gowdey*).

Also recorded from Cameroun (type data), Congo (Kinshasa) (type data), and Congo (Brazzaville) (type data).

Polyrhachis medusa Forel

Polyrhachis schistacea var. *medusa* Forel, 1897 : 206. Syntype workers, ♀, ♂, TANZANIA : Zanzibar (*A. Voeltzkow*) (MHN, Geneva).

Polyrhachis medusa Forel; Forel, 1970*b* : 92.

Polyrhachis medusae Forel; Santschi, 1914*a* : 140. [Misspelling.]

Worker. TL 12·6–14·4, HL 2·74–3·00, HW 2·40–2·52, CI 84–88, SL 3·37–3·56, SI 139–142, PW 2·24–2·52, MTL 3·51–3·70. (13 measured.)

Anterior clypeal margin straight to shallowly and broadly concave. Eye shape ranging from weakly concave to weakly convex but usually more or less flat. Sides of head and occipital margin convex; the eyes when flat not breaking the outline of the sides of the head in full-face view. Alitrunk marginate throughout its length, the marginations interrupted at the promesonotal suture and the impressed metanotal groove. Pronotal spines long, narrow and weakly incurved; propodeal armament reduced to a pair of blunt tubercles. The margination of the mesonotum and propodeum is often irregular, giving a chipped and jagged appearance in dorsal view. Dorsal surfaces of alitrunk transversely convex. Petiole with a pair of spines at the dorsolateral angles and a pair of laterally placed strong, acute teeth.

Head, body and appendages densely clothed with long, erect white hairs, some of which are curved or sinuate. Pubescence everywhere long and dense, white or off-white in colour and completely hiding the sculpturation.

Sculpturation everywhere of a very fine, superficial reticulation (revealed by scraping off the pubescence). Colour black, but specimens have a greyish appearance due to the very dense pubescence.

Female as worker, with the usual differences associated with this caste. Propodeum not marginate, the dorsum rounding into the sides. Alate females have been recorded as follows. TANZANIA : May, September.

Closely related to *schistacea*, from which it may be separated by the extremely dense clothing of long hairs and the density of the pubescence, which conceals the fine superficially reticulate sculpturation. Casual observation may possibly confuse this species with more densely hairy individuals of *militaris*, but the characters quoted under couplet 45 of the key to species will serve to discriminate the two.

Apparently nothing is known of the biology of this large species but because of its size and affinities one would expect it to be a ground nesting species as *schistacea*. Santschi (1914*a* : 140) comments upon a large Clubionid spider, 'probably *Apochinomma formicaeforme* Pavesi', which mimics *medusa*.

Material examined.

Kenya : Miongave, near Mombasa (*L.F. Brown*); Kilifi (*van Someren*). Tanzania : Dar-es-Salaam (*A. W. J. Pomeroy*); Duthuni (*A. Loveridge*); Zanzibar (Forel coll.); Tanga (*L. F. Brown*); Zanzibar, Chakwa (*E. S. Brown*). Mozambique : Pt Amelia (*F. V. Beste*). 'East Africa' : Tendaguru (*W. E. Cutler*).

Polyrhachis militaris (Fabricius)

Formica militaris Fabricius, 1781 : 493. Holotype ♀, 'Tropical Africa' (BMNH) [examined].

Polyrhachis militaris (Fabricius) F. Smith, 1858 : 72, pl. 3, fig. 5, and pl. 4, fig. 35.

Polyrhachis militaris subsp. *cupreopubescens* Forel, 1879 : 120. Holotype ♀, 'Tropical Africa' (*Sauss*) (probably in MHN, Geneva). **Syn. n.**

Polyrhachis militaris subsp. *striativentris* Emery, 1891 : 566. Syntype workers, Ivory Coast : Assinie (*Ch. Alluaud*) (MCSN, Genoa) [examined]. **Syn. n.**

Polyrhachis militaris subsp. *cupreopubescens* var. *transversaria* Forel, 1901*b* : 77. Holotype ♀, Liberia (*Hadler*) (probably in MHN, Geneva). [Name not available.]

Polyrhachis militaris var. *calabarica* Forel, 1907*a* : 38. Syntype workers, Nigeria : Old Calabar, vi.1892 (*Luke*) (MHN, Geneva) [examined]. **Syn. n.**

Polyrhachis militaris var, *ssibangensis* Forel, 1907*a* : 38. Holotype worker, Gabon : Ssibange (*Soyaux*) (MHN, Geneva) [examined]. **Syn. n.**

Polyrhachis militaris subsp. *cupreopubescens* var. *argentatus* Stitz, 1910 : 150. Syntype workers, Cameroun : Bibundi (*Tessmann*). [Name not available (not *argentatus* Fabricius).]

Polyrhachis militaris subsp. *bruta* Santschi, 1912 : 166. Holotype ♀, Congo (*Bondroit*) (probably in NM, Basle). **Syn. n.**

Polyrhachis militaris subsp. *cupreopubescens* var. *epinotalis* Forel, 1913*b* : 357. Syntype workers, Congo (Kinshasa) : Elizabethville [=Lubumbashi], ix.1911 (MHN, Geneva) [examined]. [Name not available.]

Polyrhachis militaris subsp. *cupreopubescens* var. *sankisiana* Forel, 1913*c* : 348. Syntype workers, Congo (Kinshasa) : Katanga, Sankisia (*J. Bequaert*) (MHN, Geneva) [examined]. [Name not available.]

Polyrhachis militaris subsp. *cupreopubescens* var. *nkomoensis* Forel, 1916 : 447. Syntype workers, ♀♀, ♂♂, Congo (Kinshasa) (*H. Kohl*) (MHN, Geneva) [examined]. [Name not available.]

Polyrhachis militaris subsp. *cupreopubescens* var. *dido* Wheeler, 1922*a* : 261. [Name not available.]

Polyrhachis militaris subsp. *cupreopubescens* var. *pleurata* Santschi, 1924 : 223. Syntype workers, Congo (Kinshasa) : Yambata (*di Giorgi*) (probably in NM, Basle). [Name not available.]

Worker. TL 10·8–14·1, HL 2·59–3·41, HW 1·96–2·96, CI 75–86, SL 3·18–3·89, SI 132–162, PW 1·74–2·34, MTL 3·51–4·45. (30 measured.)

Anterior clypeal margin truncate medially. Eyes weakly to strongly convex, the sides of the head in front of the eyes convex. Behind the eyes the sides may round immediately into the occipital margin, may be convergent posteriorly or may be more or less parallel, rounding into the occipital margin posteriorly. In some specimens the dorsum of the head behind the eyes is separated from the sides by a blunt angle. Alitrunk strongly marginate throughout its length, interrupted at the sutures. On each segment the margination projects laterally or vertically as a rim or flange; usually this is best developed on the pronotum where the margination is continued anteriorly on to the spines as a raised dorsal ridge. Pronotum armed with a pair of long, acute spines; propodeum with a pair of upcurved teeth or spines of very variable length. Promesonotal suture distinct; metanotal groove impressed. Petiole armed dorsally with a pair of long spines, and laterally with a pair of teeth. Anterior face of first gastral segment vertical or very shallowly concave.

Erect hairs abundant on all surfaces, greyish, silvery, golden or yellow-brown in colour. Pubescence everywhere dense, long, variable in colour and in arrangements of colour. The pubescence usually golden or grey to silver-grey, often with both colours occurring on the same specimen. The most common colour forms of the pubescence are as follows.

1. Entirely golden.
2. Golden, with sides of alitrunk grey or silver-grey.
3. Dorsum of alitrunk golden, the rest grey or silver-grey.
4. Dorsum of gaster golden, the rest grey or silver-grey.

Pubescence densest on the dorsum of the alitrunk and gaster, often completely masking the underlying sculpturation, especially on the former.

Sculpturation of head and alitrunk of a fine, longitudinal striate-rugulation, visible on the head and usually also visible on the outer edges of the pronotal dorsum at the bases of the spines. Removal of the propodeal pubescence shows that the sculpturation on this segment, although usually longitudinal, may be transverse or even diagonal. Gaster usually finely and densely reticulate-punctate, but occasionally striate-rugose, either longitudinally or transversely, or in some cases, whorled.

Female as worker but with finer sculpturation, reduced pronotal spines, petiolar spines and propodeal teeth. The margination of the propodeum is reduced and that of the pronotum indistinct.

Alate females have been recorded as follows, GHANA : June, September, October. NIGERIA : May. UGANDA : January, July, September, October. KENYA : November. TANZANIA : February, June. CONGO (KINSHASA) : January, February, March, April, September, November.

P. militaris is the largest, one of the most common, and unfortunately the most variable species of the genus found in forested Africa. The confusion which has surrounded *militaris* and its closest associates is discussed under the species *gagates* and *schistacea*, and with the separation of these species and their numerous synonyms one has remaining some eleven infraspecific names attached to, and synonymous with *militaris*. The majority of the varietal and subspecific names noted above were founded on quite trivial variations in colour or colour arrangement of the pubescence, details of sculpturation, or relative lengths of spines. The forms *striativentris* and *transversaria* were founded on specimens with striate-rugose gastral sculpturation, the former with the striae longitudinal, the latter with them transverse. Closer investigation shows that these forms are apparently confined to West Africa, but a short survey undertaken by the author at Tafo, Ghana, during 1970 showed that all forms of striate gastral sculpturation were present, including loops, whorls and even double whorls, and on one occasion specimens with striate gasters were found in a nest in which the workers had predominantly a reticulate-punctate gastral sculpturation. Two series from Ghana in the BMNH collection show that this is not uncommon. In one case, of four workers mounted on the same card, one is *transversaria*, one *striativentris* and the other two 'normal' *militaris*. That the collector was unaware of this is indicated by the fact that the specimens are mounted on their sides or upside-down.

Intergrades exist between all the described forms of pubescence colouration and distribution, and slight variations in pubescence are often to be found in the same nest series. One interesting point is that forms in which the pubescence is golden everywhere appear to be restricted to northern East Africa, and a long series from the Tero Forest, Uganda, are notable for their very bright golden pubescence. In West Africa the golden colour is usually paler or has a coppery or bronze tint.

The species is arboreal and nests are made in rotten parts of standing trees, often a considerable distance above the ground. Nests are usually constructed in the trunk or the stub of a broken branch, or in branches which have previously been mined by termites. As far as is known, silk is not utilised in nest building. If the colony is disturbed the workers curve their gasters beneath the alitrunk and eject quantities of formic acid. At the same time they tap their gasters on the floor of the nest, giving a distinct rattling sound when performed by a number of workers. Foraging is undertaken singly and the ants cross the forest floor from tree to tree. If disturbed whilst on a branch or a tree trunk the workers release their grip and fall to the ground. Workers of *militaris* are mimicked in West Africa by nymphs of a coreid bug, probably belonging to the genus *Mirperus* Stål.

MATERIAL EXAMINED.

IVORY COAST : loc. illegible (Santschi coll.). SIERRA LEONE : no further data. GHANA : Bibianaha (*Spurrel*); Tafo (*B. Bolton*) (*A. B. S. King*), (*C. A. Collingwood*); Enchi (*B. D. Peake*); Ankasa Forest Reserve (*O. W. Richards*); Kunso (*D. J. Cross*); Akwaseho (*D. J. Cross*); Worawora (*C. A. Collingwood*); Kibi (*P. M. Room*); Samreboi Forest (*C. A. Collingwood*); Bunso (*C. A. Collingwood*). NIGERIA : Ilesha (*L. E. H. Humfrey*); Southern Nigeria (*Sampson*); Old Calabar (?); Gambari (*B. Bolton*); Ile-Ife (*J. T. Medler*); Evin-Odo (*J. T. Medler*). CAMEROUN : Mt Cameroun, Bonakande (*M. Steele*); Ntsama (*C. A. Collingwood*); Nkolbisson (*L. G. Segers*). EQUATORIAL GUINEA : Fernando Po (*W. Cooper*). SUDAN : Didinga district, Nagichot (*G. D. H. Carpenter*). CONGO (KINSHASA) : Barumbu (*J. Ghesquiere*); Bas-Uele (*G. F. de Witte*); Bas-Congo, Mayidi (*R. P. Van Eyen*); Bas-Congo, Luki (Mme *Van Alstein*); Bambesa (*H. J. Bredo*); Bambesa (*J. Vrydagh*); Bosanga (*A. Collart*); Bangala, Diobo (*A. Collart*); Albertville (*H. Bomans*); Albertville (*G. Hösli*); Brabanta (*P. Henrard*); Eala (*J. Ghesquiere*); Eala (*H. J. Bredo*); Eala-Bokatola-Bikoro (*P. Staner*); Elizabethville (*Kerkvoorde*) (*A. Allaer*), (*T. D. A. Cockerell*); Equateur, Lukoiela (*R. Deguide*); Haut-Uele, Moto (*L. Burgeon*); Haut-Uele, Watsa (*L. Burgeon*); Haut-Uele, Dika (*H. Schouteden*); Ituri, Kanga-Kilo (*S. Milliau*); Gazi (P. Henrard); Ituri, Matenda (*A. Collart*); Ituri, Uluku (*A. Collart*); Ituri, Okondo (*A. Collart*); Kasai, Ipamu (*P. Vanderijst*); Kasai, Kabi (*M. Poll*); Kasai, Djeka (*R. Roiseux*); Kasai, Luisa, Forêt Kawambo (*M. Poll*); Kinshasa (*A. Tinant*); Katanga, Kando (*R. P. T. de Caters*); Katanga, Katompe (*P. Gerard*); Katanga, Lukafu (*G. F. de Witte*); Katanga, Lubudi (*M. Prinz*); Katanga, Luembe (*R. P. T. de Caters*); Katanga, Busimba (*R. P. T. de Caters*); Katanga, Lufira River (*S. A. Neave*); Dilolo (*J. Ogilvie*); Kivu, Kibate, Masisi (*R. Laurent*); Kivu, Matale (*H. Bomans*), (*R. Laurent*); Kivu, Nzombe (*Froidebise*);

Kwango, Mekwo (*Vleeschouwers*); Kisantu, Mpese (*R. P. Coosemans*); Kwamouth (*Vleeschouwers*), (*G. F. de Witte*); Kikwit (*P. Vanderijst*); Lake Kivu, Rwankwi (*J. V. Leroy*); Luluaborg (*J. J. Deheyn*); Lulua, Luashi (*Freyne*); Lulua, Kapanga (*G. F. Overlaet*); Lualaba, Kolwezi (*L. Gilbert*); Leverville (*J. Tinant*); Mayumbe, Tshenge (*A. Collart*); Mayumbe, Yanga (*A. Collart*); Mayumbe, Binga (*A. Collart*); Mongbwalu (*A. Lepersonne*), (Mme *Scheitz*); Nouvelle-Anvers (*H. Schouteden*); Stanleyville (*A. Collart*); Sankuru, M'Pemba Zeo (*R. Marechal*); Sankuru, Komi (*J. Ghesquiere*); Tshuapa, Bokungu (*Dupuis*); Tshuapa, Flandria (*P. Hulstaert*); Tshuapa, Bokuma (*R. P. Lootens*); Tshuapa, Yolo (*Buckinckx*); Ubangi, Bumba (*J. Eugene*); Uele, Dingila (*H. J. Bredo*); Yambata (*di Giorgi*). UGANDA : Tero Forest (*C. C. Gowdey*); Kawanda (*H. Hargreaves*); Entebbe (*C. C. Gowdey*), (*C. A. Wiggins*); Bugamo Forest (*C. H. Marshall*); Mariba Forest, Chagwa (*C. C. Gowdey*); Kampala, Namirembe Hill (*E. Millar*); West Ankole (*S. A. Neave*); Bwamba (*W. H. R. Lumsden*). KENYA : Taveta Forest (*M. Steele*); Lake Victoria, Kome (*G. D. H. Carpenter*). TANZANIA : Bukoba (*C. C. Gowdey*); Amani (*N. L. H. Krauss*), (*A. W. J. Pomeroy*); Tanga (Arnold coll.) (*G. Arnold*), (*R. C. H. Sweeney*); Dar-es-Salaam (*A. Loveridge*); Moero, Niunzu (*H. de Saeger*); Zanzibar (*M. J. Way*). ZAMBIA : Kipushi (*H. S. Evans*). MALAWI : Nyika Mts (*A. Whyte*).

Also recorded from Guinea, Liberia (type data), Togo, Congo (Brazzaville), and Angola.

Polyrhachis phidias Forel

(Text-figs 8, 42)

Polyrhachis phidias Forel, 1910*a* : 450. Syntype workers, EQUATORIAL AFRICA (locality unknown) (MHN, Geneva) [examined].

Worker. TL 4·9–5·1, HL 1·18–1·26, HW 1·03–1·08, CI 85–87, SL 1·18–1·26, SI 114–116, PW 1·08–1·13, MTL 1·16–1·21. (2 measured.)

Anterior clypeal margin entire, somewhat flattened medially. Sides of head in front of the strongly convex eyes shallowly convex. Behind the eyes the sides are nearly straight and meet the convex occipital margin almost in a right-angle. Alitrunk marginate laterally throughout its length, the marginations broken only at the sutures. Constituent segments of the dorsum of the alitrunk shallowly transversely convex. Pronotum armed with a pair of broad, flattened, triangular spines, the outer edges of which form a continuous convexity with the lateral marginations. Sutures well developed on the dorsum, the metanotal groove impressed. Propodeum armed with a pair of small, blunt, upturned teeth. Petiole with a pair of long, acute, lateral spines and a pair of short, triangular, dorsal teeth. Anterior face of first gastral segment strongly concave medially.

Erect hairs present on all dorsal surfaces of the body, but absent from the antennal scapes. Pubescence short and grey in colour.

Head and dorsum of alitrunk finely longitudinally striate-rugose. The first gastral segment similarly but more finely sculptured and with numerous small punctures between the rugae.

In the original description Forel stated that the locality in which the type series was captured was unknown, although 'certainly in Equatorial Africa'. This last information is also included upon the data labels of the type specimens. The species is definitely a member of the *militaris* group, as is shown by the margination of the alitrunk and the development of the metanotal groove and petiole. Hung (1967 : 403) states that in the subgenus *Myrma* the metanotal groove is distinct only in some African species and this fact, coupled with those mentioned above prove that Forel was correct in assigning this species to the Ethiopian region. *P. phidias* is most closely related to *fissa* and its immediate allies as is shown by the petiolar structure and the development of the pronotal spines. It differs from them in details of sculpturation and petiolar structure.

The habits of the species are probably similar to those of *fissa* or *decemdentata* and its range probably covers the same area as these two species, that is, the forest zones of West and Central Africa.

Polyrhachis rufipalpis Santschi

(Text-figs 11, 35)

Polyrhachis rufipalpis Santschi, 1909 : 396. Syntype workers, CONGO (BRAZZAVILLE) : Brazzaville (*A. Weiss*) (NM, Basle) [examined].

Polyrhachis rufipalpis subsp. *mayumbensis* Forel, 1913*b* : 358. Holotype worker, CONGO (KINSHASA) : Mayumbe, Kiniati (*R. Mayné*) (MRAC, Tervuren) [examined]. **Syn. n.**

Worker. TL 5·0–5·4, HL 1·26–1·29, HW 1·00–1·04, CI 78–82, SL 1·33–1·48, SI 133–142, PW 0·96–1·00, MTL 1·40–1·48. (7 measured.)

Anterior clypeal margin arcuate and entire. Eyes convex, the sides of the head in front of the eyes more or less straight and somewhat convergent anteriorly. Behind the eyes the sides round into the convex occipital margin. Alitrunk marginate laterally throughout its length, the margination interrupted only at the sutures. Constituent segments of dorsum of alitrunk transversely convex. Pronotum armed with a pair of spines, propodeum with a pair of variable teeth. Usually these are present as a pair of minute, upcurved denticles, but may be reduced to a pair of tubercles or even be absent. In one specimen a minute tubercle is present on one side but absent from the other. Promesonotal suture incised, metanotal groove impressed. In profile the propodeum rises vertically from the metanotal groove, passes through a strongly convex curve dorsally and then slopes backwards to the junction of the dorsum and the declivity. In dorsal view the marginations of the propodeum are slightly divergent posteriorly. Petiole with a blunt process ventrally, armed with four spines, the dorsal pair longer than the laterals, straight, directed slightly outwards and backwards. Lateral pair of spines directed outwards and very slightly upcurved. Anterior face of first gastral segment only very shallowly concave.

Body devoid of erect hairs except upon the anterior clypeal margin and the gastral apex. A fine pubescence present everywhere.

Sculpturation everywhere of a fine reticulation. Colour black, the tibiae lighter, brown to orange-brown, dully shining.

Female as worker apart from the usual differences associated with caste. A recently dealated female was recorded in Ghana in June.

The subspecies *mayumbensis* is a straight synonym of *rufipalpis*. In the original description Forel admitted that he had not seen any material of the species. In fact, the type of *mayumbensis* has rather long propodeal teeth and the lateral pair of petiolar spines are noticeably thicker than the dorsal pair, but in all other respects it is as *rufipalpis*.

A small, arboreal, active species, closest related to *alluaudi*, differing from it in size and details of sculpturation. A solitary female caught in eastern Ghana was running on a tree trunk with several *fissa* workers. Nests are probably constructed of fibre.

MATERIAL EXAMINED.

GHANA : Tafo (*B. Bolton*); Atewa (*D. Leston*).

Also recorded from Congo (Brazzaville) (type data) and Congo (Kinshasa) (type data).

Polyrhachis schistacea (Gerstaecker)

Hoplomyrmus schistaceus Gerstaecker, 1858 : 262. Holotype worker, MOZAMBIQUE (probably in MNHU, Berlin).

Polyrhachis carinatus F. Smith, 1858 : 71, pl. 4, figs 48, 49. Holotype worker, SOUTH AFRICA : Natal, Durban. [nom. preocc. (not *carinata* Fabricius).]

Polyrhachis rugulosus Mayr, 1862 : 685, pl. 19, fig. 17. Holotype worker, SOUTH AFRICA : Natal, Durban (not Brazil) (probably in NM, Vienna). **Syn. n.**

Polyrhachis schistazeus (Gerstaecker); Mayr, 1863 : 446 [misspelling].

Polyrhachis militaris st. *cafrorum* Forel, 1879 : 120. Syntype workers, ♀, ♂, SOUTH AFRICA : Transvaal, Valdezia (*M. Berthoud*) (probably in MHN, Geneva).

Polyrhachis schistacea var. *divina* Forel, 1913*c* : 348. Syntype workers, TANZANIA : Pemba Is. (probably in MHN, Geneva). **Syn. n.**

Polyrhachis schistacea var. *divinoides* Forel, 1913c : 348. Syntype workers, CONGO (KINSHASA) : Katanga, Sankisia (*J. Bequaert*) (probably in MHN, Geneva). **Syn. n.**

Polyrhachis schistacea subsp. *atrociliata* Santschi, 1914*a* : 141. Syntype workers, UGANDA : Ibanda, foothills of Ruwenzori Mts, 1400 m, 1909 (*Alluaud* et *Jeannel*) (MRAC, Tervuren). **Syn. n.**

Polyrhachis schistacea subsp. *atrociliata* var. *benguelensis* Santschi, 1914*a* : 141. Holotype worker, ANGOLA : Benguela, Ubanghi (NM, Basle) [examined]. [Name not available.]

Polyrhachis schistacea subsp. *fracta* Santschi, 1914*a* : 141. Holotype worker, KENYA : Fort Hall, 1330 m, i.1912 (*Alluaud* et *Jeannel*) (probably in NM, Basle). **Syn. n.**

Polyrhachis schistacea subsp. *fracta* var. *subplana* Santschi, 1914*a* : 142. Holotype worker, KENYA : Gazi, xi.1911 (*Alluaud* et *Jeannel*) (NM, Basle) [*examined*]. [Name not available.]

Polyrhachis schistacea var. *gagatoides* Santschi, 1914*a* : 142 [in key]. Syntype workers, CONGO (BRAZZAVILLE) (*A. Weiss*) (NM, Basle) [examined]. **Syn. n.**

Polyrhachis schistacea subsp. *atrociliata* var. *mediopilosa* Santschi, 1923 : 295. Holotype worker, CONGO (KINSHASA) : Irumu (*J. Bequaert*) (NM, Basle) [examined]. [Name not available.]

Worker. TL 9·3–13·7, HL 2·15–2·78, HW 1·63–2·26, CI 76–80, SL 2·78–3·40, SI 141–170, PW 1·29–1·89, MTL 3·07–3·89. (30 measured.)

Anterior clypeal margin entire. In profile the clypeus is usually convex above and concave below, the anterior margin projecting as a weak shelf over the basal borders of the mandibles. Eyes virtually flat to strongly convex; the sides of the head in front of the eyes gently convex, occipital margin distinctly so. Alitrunk marginate throughout its length, the marginations sharp but not flange-like or lamellate, nor distinctly projecting upwards or outwards from the dorsum; interrupted at the sutures. Pronotal spines long and acute, usually with a narrow base. Propodeal teeth of variable length, usually small and upcurved. Pronotal suture distinct; metanotal groove impressed. Petiole with a pair of long dorsal spines and a pair of laterally placed teeth.

Erect hairs numerous, usually present on all surfaces, always present on the side of the head between the eye and the ventrolateral border and on the mesonotal and propodeal dorsa. Colour of hairs varies from white to black. Pubescence usually greyish and dense but never so dense as to mask the underlying sculpturation. In some the pubescence is very much reduced.

Sculpture variable, may be of a fine reticulo-rugulation, a disoriented mass of small rugae, or a fine dense longitudinal rugulation on the dorsal surfaces of the head and alitrunk. Gastral sculpturation varying from finely reticulate to finely reticulate-punctate. If the gaster is finely reticulate the rims of the reticulae are raised and not merely superficial as in *gagates*. Colour uniform black, or with the legs black-brown. Usually dull, occasionally with the gaster polished.

Female answers to the above description with the usual differences associated with this caste. Alate females have been recorded as follows, UGANDA : August, November. KENYA: February. MALAWI : March. RHODESIA : January.

Most of the synonyms tabulated above are very straightforward, the respective subspecies and varieties being founded on hair colour, density of pilosity, intensity of sculpturation or differences in sculptural details, convexity of eyes, or on size and relative proportions of constituent parts of the alitrunk. The present study has shown these to be gradient factors, at times even with variation in the same nest series. In the specimen of *fracta* examined (det. Santschi, from Nyanza) the eyes are flattened and the gaster rather polished, but otherwise the specimen is a very ordinary *schistacea*, as is its var. *subplana* which is rather more hairy and less shining than *fracta*.

Santschi (1914*a* : 142) presented a key to the then described forms of *schistacea* and in the first couplet he indicated that he was aware that with eye shape he was not dealing with a distinct and constant difference but with a variable character. The couplet (translated) states:

1. Eyes convex. . . .
–. Eyes flat or nearly flat. . . .

At the present time a series of specimens can be constructed showing almost all intergrades in eye convexity from nearly flat through to strongly convex, and the same applies to all the other characters noted above as variable except for hair colour, which seems to be constant at least in a given nest series.

As has been pointed out in the discussion of *gagates*, Forel (1913*b* : 357) was of the opinion that *gagates* and *schistacea* were probably synonymous and was supported in this view by Wheeler (1922*a* : 260) who considered that the large species comprising the *militaris* complex were, 'so variable and exhibit so many annectant subspecies and varieties that one is tempted to regard the whole complex as a single, extraordinarily unstable species'.

Santschi (1914*a* : 143) took an opposing line and asked if the numerous intermediate varieties noted in the three species were not simply hybridisation phenomena between closely related groups.

It became obvious during the course of the present survey that the infraspecific forms could be satisfactorily incorporated in one or another of the species concerned and this has lead to the definition of the species rather more accurately. Further work may show that the Forel-Wheeler view is correct in some cases, but at the present time the amount of material required to complete such an investigation has not been amassed. On the other hand, hybridisation is not the complete answer either, as only a single specimen which could possibly be called a hybrid has been seen during the course of this study (see under *gagates*) but even this specimen could be assigned to a definite species.

P. schistacea is a common savannah and scrub forest species which ranges from Sudan to South Africa and from the east to the west coasts of the continent south of the Sahara, but it is absent from rain forest, where it is apparently replaced by *militaris*. Nests are constructed in the earth either in open ground where a crater is formed around the entrance, or under stones. More rarely the species nests in or under decayed wood. Foraging is carried out on the surface of the ground, on grass stems and on low bushes. Arnold (1924 : 745) states that the entrance to the nest, when made directly into the ground is 'surrounded by an irregular, cup-like wall about one to one and a half inches high, made of woven pieces of grass blades'. He also notes that the ant tends aphids and coccids, one of the few food records for the genus in the Ethiopian region.

MATERIAL EXAMINED.

SIERRA LEONE : specimen without further data. IVORY COAST : Bouake (*G. Schmitz*). TOGO : Agou (*Y. Schach*). NIGERIA : Ogbomosho (*B. Bolton*); Obudu (*J. T. Medler*). SUDAN : Imatong Mts (*N. A. Weber*); Torit (*W. T. R. L.*). ETHIOPIA Didessa River (*K. M. Guichard*). UGANDA : Ibanda (*Ch. Alluaud*); Nakanyonyi (*E. Millar*); Kawanda (*G. H. E. Hopkins*); Entebbe (*S. A. Neave*), (*C. C. Gowdey*); Bundibugyo (*D. S. Fletcher*); between Seziwa and Kampala (*S. A. Neave*). RWANDA, BURUNDI : Nyanza (?); Kibungu (*R. Verhulst*). KENYA : Ngabana (*Gregory*); Gazi (*Ch. Alluaud*); Miongave (*L. F. Brown*); Diani Beach (*N. L. H. Krauss*); Narossura River (*W. P. Lowe*); Simba (*S. A. Neave*); Mombasa (*S. A. Neave*). TANZANIA : Tembwe (*H. Schouteden*); Mpala (*H. Bomans*); Moero, Niunzu (*H. de Saeger*); Zanzibar, Chakwa (*E. S. Brown*); Zanzibar, Chukwani (*E. S. Brown*); Uvira (*J. Ogilvie*); Ngoga (*A. Loveridge*). MALAWI : Mombera Dist. (*S. A. Neave*); Masuku Mts, 6000–7000 ft (*A. Whyte*); Mlanje (*S. A. Neave*); Fort Johnston (*P. Rendall*); Nyika Mts (*A. Whyte*); between Fort Mangoche and Chikala Boma (*S. A. Neave*); Ruo Valley (*S. A. Neave*). GABON : Libreville (*A. Tinant*). CONGO (BRAZZAVILLE) : Brazzaville (*A. Weiss*), (*L. Detaille*). CONGO (KINSHASA) : Bas-Congo, Lemfu (*P. de Beir*); Bas-Congo, Moanda (*E. Dartevelle*); Bas-Congo, Bateke-Nord (*R. C. Eloy*); Costermansville (*P. H. Vercammen*); Haut-Uele, Paulis (*P. L. G. Benoit*); Inkongo, Lusambo (*Wilson*); Haut-Uele, Moto (*L. Burgeon*); Haut-Uele, Watsa (*L. Burgeon*); Haut-Uele, Mauda (*H. Schouteden*); Ituri, Faradje (*A. Collart*); Ituri, Mahagi (*H. Schouteden*); Ituri, Caporata (*L. Burgeon*); Ituri, Moibe, Sesenge (*A. Collart*); Ituri, Lisasi (*Van Canneyt*); Ituri, Fôret de Kawa (*A. Collart*); Ituri, Kwambe (*A. Collart*); Ituri, Bunia (*J. V. Leroy*); Jadotville (*R. P. T. de Caters*); Katanga, Lubueli (*M. Prinz*); Katanga, Kabalo (*H. Schouteden*); Katanga, Kiambi (*G. F. de Witte*); Katanga (*A. Bayet*); Katanga, Mwema (*A. Bayet*); Katanga, Pweto (*A. Bayet*); Katanga, Lufira River (*S. A. Neave*); Katanga, Dilolo (*A. Mackie*); Kunungu (*H. Schouteden*); Kasongo, Lupaya (*P. L. G. Benoit*); Kasongo, Komato (*P. L. G. Benoit*); Kasai, Ipamu (*P. Vanderijst*); Kasai, Tshikapa (*Fourche*); Kikwit (*P. Vanderijst*); Kibali-Ituri, Geti (*C. Scops*); Kivu, Buseregenye (*E. Luja*); Kivu, Uvira (*G. Marlier*); Kamina (*A. Buls*); Kabalo (*L. Ogilvie*); Kambove (*S. A. Neave*); Leopoldville (*A. Tinant*); Luluaborg (*A. Francois*), (*J. van Hutuelde*); Lomami, Kamina (*Bernard*); Mahagi, Niarembe (*C. Scops*); Mayidi (*P. Van Eyen*); Mayema (*R. Mayne*); Mayumbe, Tshiobo-N'Goy (*A. Collart*); Rutshuru (*L. Lippens*); Sankuru, Gandaljika (*P. de Franquen*); Stanleyville (*A. Collart*); Sakonia (*J. Ogilvie*); Thysville (*P. Basilewsky*); Uele, Pawa (*A. Dubois*); Urundi, Usumbura (*H. Schouteden*); Vuhovi (*H. J. Bredo*); Vista (*A. T. Marée*). RHODESIA : Lochimvar (*F. van Noten*); Bulawayo (*G. Arnold*); Matoppos (*G. Arnold*); Sawmills (*G. Arnold*); Inyanga (*G. Arnold*). MOZAMBIQUE : Beira (*L. F. Brown*); Delagoa Bay (*R. E. Turner*). ANGOLA : Luanda (*Gradwell* and *Snow*); Cabinda (*P. Allaer*). SOUTH AFRICA : Natal, Zululand, Nagana Research Lab. (*H. H. Curson*); Natal, Durban (*F. W. B. Marley*), (*C. B. Cooper*), (*F. Muir*); Amanzimtoti (*T. D. A. Cockerell*); Pretoria (*W. L. Distant*); Natal, Umgeni (*C. P. V. D. Merwe*); Transvaal (*G. Mayr* coll.); Wonderboom (*T. D. A. Cockerell*); Morebank (*A. Mackie*).

Also recorded from Guinea, Cameroun and Somali Republic.

Polyrhachis schlueteri Forel

Polyrhachis militaris st. *schlüteri* Forel, 1886 : 195. Holotype worker, EAST AFRICA (*Schlüter*) (MHN, Geneva).

Polyrhachis schlüteri Forel; Forel, 1907*b* : 92.

Polyrhachis schlüteri var. *indigens* Forel, 1914 : 261. Syntype workers, SOUTH AFRICA : Natal, Durban (*G. Arnold*) (probably in MHN, Geneva).

Polyrhachis schlüteri var. *plebeia* Santschi, 1914*a* : 143. Holotype worker, KENYA : Taveta, 750 m, iii.1912 (*Alluaud* and *Jeannel*) (probably in NM, Basle). **Syn. n.**

Worker. TL 8·6–9·1, HL 2·00–2·23, HW 1·66–1·78, CI 79–85, SL 2·25–2·60, SI 142–149, PW 1·54–1·78, MTL 2·49–2·60. (15 measured).

Anterior clypeal margin arcuate and entire to weakly and shallowly impressed in the middle. Eyes strongly convex, situated well back on the sides of the head, which are slightly convex both in front of and behind the eyes. Behind the eyes the sides rounding gently into the weakly convex occipital margin. The shape of the head and placement of the eyes gives the ant a very long-faced appearance. Alitrunk marginate laterally throughout the length of the sides. Pronotal spines large, their outer borders continuous with the line of margination of the segment, not passing through an angle between the pronotum and the body of the spine. Propodeum with a pair of small, blunt tubercles. Promesonotal suture and metanotal groove distinct, the latter impressed. Petiole with a pair of strong dorsal spines subtended by a pair of laterally placed, broad, acute teeth. Anterior face of first gastral segment concave.

Erect hairs absent from all dorsal surfaces except the anterior clypeal margin and gastral apex. Pubescence extremely dense everywhere, hiding the sculpture and silver-grey in colour.

Sculpture everywhere of a fine, dense reticulation. Colour black, the legs usually brown-black. Whole insect with a silvery appearance in life due to the dense pubescence.

Female. As worker apart from the usual modifications associated with the alitrunk. Alates have been recorded as follows: TANZANIA: August. S. AFRICA: January.

The variety *indigens* was reduced to a synonym by Arnold (1924 : 747) who noted that the pubescence of the variety was supposedly less brilliant, but that this was an artifact brought about by the immersion of the specimens in spirits of wine which to a great extent had destroyed the colour. Santschi's variety *plebeia* was founded on a single worker with minor differences in the curvature of the upper pair of petiolar spines and the development of the lateral teeth, which are in all probability individual variations as some variability in these characters can be seen in series from the vicinity of Durban, Natal.

Related to the *militaris* complex of species, from which *schlueteri* is very easily separated by the absence of standing hairs on the dorsum of the head, alitrunk and gaster and by the dense silver-grey pubescence.

Arnold (1924 : 748) states that the species is limited to hot and moist localities, but otherwise nothing has been reported on the habits of this species.

MATERIAL EXAMINED.

TANZANIA : Handeni (*W. A. Lamborn*). SOUTH AFRICA : Natal, Durban (*G. Arnold*), (*F. Muir*), (*H. B. Marley*).

Also recorded from Kenya (type data) and Mozambique.

Polyrhachis sulcata E. André

(Text-figs 43, 62)

Polyrhachis sulcata E. André, 1895 : 1. Holotype ♀, CONGO (BRAZZAVILLE) : Ogowe (probably in MNHN, Paris).

Worker (previously undescribed). TL 7·8–9·2, HL 1·89–2·07, HW 1·52–1·67, CI 78–80, SL 2·18–2·24, SI 134–143, PW 1·29–1·37, MTL 2·29–2·48. (6 measured.)

Anterior clypeal margin arcuate, entire; the clypeal suture forming a distinct break in the sculpture. Sides of head weakly convex in front of the strongly protuberant eyes, convex and converging behind the eyes. Lateroventral margins of head concave. Frontal carinae with strongly sinuate, laminate lobes. Sides of pronotum and mesonotum marginate, propodeum immarginate, the sides rounding into the dorsum. Pronotum armed with a pair of spines, the propodeum with a pair of spines which curve upwards and outwards and are somewhat longer than those of the pronotum. Propodeum also with a pair of small triangular prominences anterolaterally, just posterior to the impressed metanotal groove. Petiole with a pair of long, acute, almost parallel dorsal spines and a pair of shorter, upcurved lateral spines. Anterior face of first gastral segment vertical, not concave.

Off-white to yellowish white erect hairs present on all surfaces of body and appendages, most dense on the legs, antennal scapes and the gaster. Pubescence virtually absent, distinctive only on the funiculi and tarsal segments, sparse on the scapes and the remainder of the legs and completely absent from the dorsum of the alitrunk.

Sculpture of head, alitrunk, petiole and gaster of very deep, regularly spaced striae, the areas between them strongly convex so that the surface has a ploughed appearance. In direction they are longitudinal on the head, pronotal, mesonotal and gastral dorsa and on the pronotum and gaster laterally; transverse on the propodeal declivity, posterior face of the scale and anterior face of the gaster, and oblique on the mesopleuron, metapleuron and sides of the propodeum. On the propodeal dorsum the striae are V-shaped dorsally.

Colour black, with the apical margins of the mandibles sometimes lighter, brown or yellow-brown. The tips of the apical funicular segments, palpi, and apices of the pretarsi yellow or dull yellow-brown. The eyes of one worker are white, but this is an artifact common in stored *Polyrhachis* specimens.

Female agreeing with the above description except for the following points which are noted by André in the original description of the female:

1. Erect hairs dirty yellow. This colouration would appear to fall well within the range of the species, as is noted above.

2. Striae transversely arched on pronotum. In the worker the striae are longitudinal; the transverse direction in the female may be accounted for by the foreshortening of this segment in the queen caste, as is seen in other species with similar sculpturation (e.g. *latispina*).

This distinctive and beautiful species is known only from the female holotype and the two collections made more recently in Ghana, as noted below. Both these collections were made by pyrethrum knock-down in areas reasonably well-collected by methods which were more normal but which had failed to produce this species. This seems to indicate that *sulcata* is an arboreal form which hardly, if ever, descends to ground level. Its affinities definitely lie with the *militaris* group of species but it is easily separated from the other constituent species by the lack of propodeal margination and the unique sculpturation.

MATERIAL EXAMINED.

GHANA : Kade (*D. Leston*); Bunso (*D. Leston*).

Also recorded from Congo (Brazzaville) (type data).

Polyrhachis wellmani Forel

(Text-fig. 23)

Polyrhachis wellmani Forel, 1909 : 68. Syntype workers, ANGOLA : Benguela (*C. Wellman*) (MHN, Geneva) [examined].

Worker. Tl 8·3–8·7, HL 2·22–2·37, HW 1·74–1·85, CI 78, SL 2·74–2·81, SI 152–157, PW 1·40–1·48, MTL 2·92–3·00. (3 measured.)

Very similar to *schistacea*. Clypeus with a more or less distinct, truncate lobe, the anterior margin of which has numerous notches from which stout hairs arise. Eyes convex; sides of head in front of eyes convex. Alitrunk marginate laterally throughout its length, interrupted at the sutures. Pronotum armed with a pair of long spines, propodeum with a pair of short, thick upcurved teeth. Promesonotal suture distinct; metanotal groove impressed. Petiole with only a single pair of spines, situated at the dorsolateral angles of the segment. The lateral pair completely absent. Anterior face of first gastral segment shallowly concave.

Entire body with numerous erect yellow-white or off-white hairs and a long, dense pubescence which in part hides the sculpturation, especially on the dorsum of the alitrunk.

Head with a fine longitudinal rugulation overlying a fine reticulo-puncturation. Dorsum of alitrunk similarly sculptured but with the puncto-reticulate part of the sculpturation more distinct on the pronotum than on the following segments on which the longitudinal rugulation predominates. Gaster finely and densely reticulate-punctate.

This species is so closely related to *schistacea* that it would have been synonymised had it not been for a single character which appears to be consistent, namely the lack of lateral petiolar teeth. In size *wellmani* lies towards the lower end of the *schistacea* range and it may be that a more detailed investigation of smaller *schistacea* specimens will show a gradual diminution of the lateral petiolar teeth until a *wellmani*-like condition is reached. Suffice to say that during the present investigation all small *schistacea* specimens retained the lateral petiolar teeth whilst in the present species they were completely absent.

Habits of this species unknown, but probably as *schistacea*.

MATERIAL EXAMINED.

CONGO (KINSHASA) : Katanga, Kansenia (*G. F. de Witte*).

Also recorded from Angola (type data).

THE *VISCOSA*-GROUP

This group of species is closely related to, and has probably developed from, the *militaris*-group. The characteristics of the group include the reduction of the sutures of the alitrunk to faint, non-impressed lines and a reduction in the intensity of the lateral margination of the alitrunk, which in the present group of species is represented only by a low ridge or an acute angle and not as a projecting rim or flange as is so often seen in the *militaris*-group. The basic sculpturation consists of a fine, dense, reticulate-puncturation which is usually overlaid on the head and alitrunk by a loose rugoreticulum. In *arnoldi*, however, the ground sculpturation is overlaid and very much replaced by a fine, dense longitudinal striation which extends on to the gaster.

An interesting character found in this group is the development in many of its species of a transverse ridge running across the propodeum between the propodeal teeth or spines, and effectively separating the dorsum from the declivity. The development of the character is variable; for instance in *nigrita* it is absent, in *spinicola* present, but in most species in which the ridge occurs it is raised medially into a blunt tooth or tubercle, best developed in *cubaensis*. The presence of a distinct, transverse propodeal ridge is noticeable in some species of other groups, namely *latispina* of the *militaris*-group and *lestoni* and *limitis* of the *alexisi*-group.

Viscosa and related species are virtually devoid of erect hairs. In all species of the group hairs are restricted to the anterior clypeal margin and the gastral apex and only occasionally is a pair of hairs developed upon the dorsum of the head or alitrunk.

The petiolar structure in the group parallels that of the *militaris* group. The usual form is similar to that found in species closely related to *fissa*, with the dorsal and lateral spines of approximately equal length, but there is a tendency towards the lengthening of the dorsal pair, best seen in *durbanensis*.

Two species, *nigrita* and *viscosa*, show an increasing development of the lateral spines at the expense of the dorsals. As the laterals increase in size they tend to occupy the dorsolateral corners of the petiole so that the dorsal pair come to project from an almost flat surface running between the lateral spines. In *viscosa* the dorsals are still spiniform and a short but strongly sloping surface separates them from the laterals, but in *nigrita* the dorsals are reduced to a pair of teeth projecting from the almost flat surface between the very large lateral spines.

All members of the group are restricted in distribution to savannah and veldt regions; none have been recorded from the forests of West and Central Africa.

Polyrhachis arnoldi Forel

(Text-figs 27, 63)

Polyrhachis arnoldi Forel, 1914 : 263. Holotype worker, SOUTH AFRICA : Natal, Durban (*G. Arnold*) (MHN, Geneva).

Worker. TL 7·0–8·1, HL 1·74–1·89, HW 1·48–1·56, CI 82–85, SL 1·85–1·93, SI 123·125, PW 1·33–1·37, MTL 1·92–2·00. (7 measured.)

Anterior margin of the clypeus with a small median emargination. Sides of head in front of the eyes more or less straight, weakly convergent; occipital margin strongly convex. Eyes weakly convex. Alitrunk marginate throughout its length, the sides converging posteriorly so that the pronotum is notably broader than the propodeum. Pronotum bispinose; propodeum armed with a pair of short, upcurved teeth between which runs a transverse carina separating the dorsum from the declivity. The central portion of this carina is raised and appears as a prominence or blunt tooth in profile. Promesonotal suture and metanotal groove poorly developed, the former weak but distinct, the track of the latter indicated only by a break in the sculpturation. Both are transverse and are very little arched. Petiole with four spines of approximately equal length, the lateral pair somewhat more stout than the dorsal. Middle of anterior face of first gastral segment concave and accommodating the posterior face of the petiole.

Erect hairs present only on mandibles, anterior margin of clypeus and apex of gaster. All dorsal surfaces without erect hairs; pubescence developed only on the appendages.

Sculpturation of clypeus a fine, superficial reticulation with scattered, very shallow pits. Head between eye and antennal insertion reticulate, rest of dorsum of head finely, longitudinally striate. Dorsum of alitrunk and first gastral segment finely and densely longitudinally striate, the second gastral segment very finely reticulate. Alitrunk laterally and anterior face of petiole finely rugulose. Colour black, dully shining; the legs usually brown-black, the palpi yellow-brown.

P. arnoldi appears to be an uncommon species, related to *cubaensis* and *spinicola*, from which it is most easily separated by the form of the sculpturation. In related species the sculpturation is mainly of a fine reticulate-rugulation with punctate or reticulate-punctate interspaces.

Arnold (1924 : 751) states that, 'the only nest found was made in a shallow concavity on the vertical trunk of a tree, the hollow being covered by a more or less circular lid, about 2½ inches in diameter, made of a very closely woven silky web in which were embedded particles of bark and dirt'.

In this respect the nest resembles those of *otleti* found in secondary forest or cultivated land in West Africa.

MATERIAL EXAMINED.

MALAWI : Mlanje Boma (*S. A. Neave*). SOUTH AFRICA : Natal, Durban (*G. Arnold*); Natal, Durban (*F. B. Marley*).

Polyrhachis cubaensis Mayr

Polyrhachis cubaensis Mayr, 1862 : 686. Holotype worker, SOUTH AFRICA : Natal, Durban (not Cuba) (probably in NM, Vienna).

Polyrhachis gerstaeckeri Forel, 1886 : 197. Holotype worker, TANZANIA : Zanzibar (*Hildebrandt*) (probably in MHN, Geneva). **Syn. n.**

Polyrhachis cubaensis var. *striolatorugosa* Mayr, 1893 : 195. Holotype worker, TANZANIA : Zanzibar (probably in NM, Vienna). **Syn. n.**

Polyrhachis cubaensis subsp. *wilmsi* Forel, 1910*b* : 30. Holotype worker, MOZAMBIQUE : Lobombo Borges (*F. Wilms*) (probably in MHN, Geneva). **Syn. n.**

Worker. TL 6·4–7·5, HL 1·77–1·85, HW 1·59–1·67, CI 89–91, SL 1·75–1·88, SI 110–113, PW 1·33–1·41, MTL 1·85–1·93. (4 measured.)

Anterior clypeal margin entire, somewhat truncated medially and with a pair of notch-like pits from which long hairs arise. In profile the slope of the clypeus is suddenly less steep towards the anterior margin and this area is rather more convex than the rest of the clypeus. Eyes convex. The head broadly convex behind, the sides of the head in front of the eyes gently convex and convergent. Alitrunk marginate throughout its length, the dorsal surfaces transversely convex; the propodeal dorsum usually strongly convex medially and with the margination somewhat projecting. Pronotum armed with a pair of broad spines. Promesonotal suture and metanotal groove represented by incised lines; the former better developed than the latter which may in places fail to break the sculpturation. Propodeum with a pair of upcurved spines of variable length and thickness. Between these spines and separating the propodeal dorsum from the declivity runs a transverse ridge, the centre of which is raised up into a median eminence, tubercle or tooth. The size of this eminence is variable and may be small in some individuals, but the ridge is always present and distinct. Petiole with four spines of approximately equal size, the dorsal pair directed upwards and recurved over the base of the gaster; the lateral pair directed outwards and somewhat upwards. Anterior face of the first gastral segment shallowly concave.

Erect hairs present on the clypeus and usually with a double row running between the frontal carinae and on to the vertex. Gaster with hairs usually on the second to last tergite, but absent from the first. A fine, sparse, greyish pubescence present, especially on the appendages, gaster and lateral alitrunk.

Clypeus finely reticulate. Head finely longitudinally rugose, the rugae on the vertex fanning out from the space between the frontal carinae. Sculpturation of the dorsal alitrunk usually of fine longitudinal rugae overlying a fine, dense reticulate-puncturation. The rugae are usually most distinctly longitudinal in the middle of each segment and tend to a fine rugoreticulum laterally; this is especially true of the pronotum. Gaster finely and densely reticulate. The intensity of sculpturation varies. In some the longitudinal rugae may be sharp and distinct, in others low and rounded. Colour black; the legs usually dark brown but may be lighter or almost black.

In the short original description of this species Mayr gave the type locality as Cuba. He corrected this (Mayr, 1893 : 195, footnote) and pointed out that the type locality was in fact Durban. Arnold (1924 : 752) explains that the inappropriate specific name was due to a mixing of labels.

The extensive description of *striolatorugosa* makes up for the brevity of the original description of the species and in fact does not really give any reasons as to why the two forms should be separated. The present author assumes that Mayr took the opportunity of a slightly different specimen to provide a more accurate description of the species as a whole. In the same paper Mayr (1893 : 196) points out that *gerstaeckeri* is best treated as a variety of *cubaensis* but the slight sculptural differences used to separate the two are variable and the names are best treated as synonyms.

Arnold (1924 : 753) records the species nesting 'in hollow stem galls, the walls of the gall partly covered with a web'.

MATERIAL EXAMINED.

SOUTH AFRICA : Zululand (*G. Arnold*).

Also recorded from Mozambique (type data), and Tanzania (type data).

Polyrhachis durbanensis Forel **stat. n.**

(Text-figs 12, 30)

Polyrhachis cubaensis race *durbanensis* Forel, 1914 : 262. Syntype workers, ♀, SOUTH AFRICA : Natal, Durban (*C. B. Cooper*) (MHN, Geneva) [examined].

Worker. TL 6·7–7·3, HL 1·59–1·70, HW 1·29–1·37, CI 80–84, SL 1·64–1·70, SI 123–124, PW 1·03–1·08, MTL 1·74–1·85. (6 measured.)

Anterior clypeal margin arcuate and entire. Eyes convex; the sides of the head in front of the eyes gently convex and convergent anteriorly, behind the eyes convex and rounding into the broadly convex occipital margin. Alitrunk with dorsum transversely convex, marginate throughout its length. Pronotum armed with a pair of short, broad, acute spines. Promesonotal suture distinct, metanotal groove very faint, interrupting the sculpturation. Marginations of propodeum virtually parallel in dorsal view, terminating in a pair of very small, upcurved, tubercle-like teeth. Propodeal dorsum meeting the declivity between these teeth at an acute angle but without a transverse ridge or median tubercle. Petiole with two pairs of spines of variable configuration. Usually the long dorsal pair are directed upwards and recurved backwards, the shorter lateral pair directed outwards, weakly backwards, and somewhat upcurved. Anterior face of first gastral segment shallowly concave.

Erect hairs absent except on clypeus and gastral apex; sometimes a single pair present on the vertex. A very sparse, fine, greyish pubescence present, densest on the antennae.

Clypeus finely reticulate. Head finely and densely reticulate-punctate, overlaid by a fine loose rugoreticulum, most easily visible in the space separating the eye and the frontal carina. Dorsum of alitrunk and gaster finely reticulate-punctate, the former with a few fine, disorganised rugae overlying the punctures, generally best seen on the mesonotum.

Female as worker except for differences generally associated with this caste; the pronotal spines and the propodeal teeth reduced to acute angles.

The original description of *cubaensis* was very short, mostly a discussion of the sculpturation with very little mention of morphological details. Mayr (1893 : 195) realised this and gave a full description under var. *striolatorugosa*, which was however published in a rather obscure journal. When describing *durbanensis* as a race of *cubaensis*, Forel obviously used only the original description and was not aware of, or overlooked Mayr's later paper, or he would have noticed the morphological differences between the two forms. As it was, his description occupied only few lines. Arnold (1924 : 753) recognised the paucity of this description and proceeded to redescribe *durbanensis* in more detail, but although he notes Mayr's publication of 1893 he gives a copy of the original and inferior description. If the two later descriptions (Mayr, 1893 and Arnold, 1924) had been compared then the differences between *cubaensis* and *durbanensis* would have been recognised, and the race would have been raised to specific status long ago.

The species has been found inside the hollow stems of reeds, but whether this also constitutes the nest site is not known.

MATERIAL EXAMINED.

SOUTH AFRICA : Natal, Durban (*C. B. Cooper*).

Polyrhachis nigrita Mayr

(Text-figs 14, 40)

Polyrhachis nigrita Mayr, 1895 : 153. Holotype worker, GHANA : Chama (*Brauns*) (probably in NM, Vienna).

Polyrhachis schoutedeni Santschi, 1919 : 249. Holotype worker, CONGO (KINSHASA) : Dolo, xi.1912 (*F. Chaltin*) (MRAC, Tervuren) [examined]. **Syn. n.**

Worker. TL 7·0–8·9, HL 1·70–2·04, HW 1·48–1·70, CI 83–87, SL 1·89–2·22, SI 130–134, PW 1·15–1·34, MTL 1·92–2·37. (6 measured.)

Clypeus usually with the anterior margin slightly raised, may be weakly emarginate. Eyes convex; occipital margin strongly convex. Antennal scapes broadening apically, about two or three times broader at the apex than at the base but not distinctly and abruptly thickened apically as in *viscosa*. Alitrunk marginate throughout its length, the marginations only poorly developed. Pronotal and propodeal spines well developed, the latter without a transverse ridge running between them, the dorsum rounding evenly into the declivity. Promesonotal suture distinct, metanotal groove represented by a weakly incised line which in places fails to break the sculpturation. Petiole with the lateral pair of spines long and strong, produced outwards and upwards and curved backwards around the base of the gaster. Between these spines are a pair of short teeth, which may be reduced to blunt tubercles. Anterior face of the first gastral segment concave.

Development of erect hairs variable. In smaller specimens a few hairs are present on the anterior clypeal margin and the gastral apex only, but in larger individuals a few may also be present on the dorsum of the head and the alitrunk. Pubescence greyish white, sparse, densest on gaster and sides of alitrunk.

Clypeus with extremely fine longitudinal striae, contrasting to the rest of the head which has a fine reticulate-rugulation, the spaces enclosed by the reticulae finely punctate. A similar sculpturation is found on the dorsum of the alitrunk but laterally the rugae are effaced, leaving the surface finely reticulate-punctate. Gaster minutely and densely reticulate-punctate.

The general body form allies this species to *viscosa* and *cubaensis* as was pointed out by Mayr in the original description. The species is distinguished by the marked reduction of the dorsal pair of petiolar spines and the lack of a transverse ridge separating the propodeal dorsum from the declivity.

The name *schoutedeni* was applied by Santschi to a very small individual of this species. Apart from its small size, which suggests that it may have come from a young colony, it does not differ from *nigrita* in any way. The dimensions of the type specimen of *schoutedeni* are as follows, TL 5·9, HL 1·52, HW 1·33, CI 87, SL 1·70, SI 128, PW 1·00, MTL 1·85.

Probably a ground nesting species which forages on low vegetation as the specimens from Uganda studied during the course of this survey were obtained by sweeping in a marsh. Wheeler (1922*a* : 267) states that a single worker from Akenge, Congo (Kinshasa) was taken from the stomach of a toad.

MATERIAL EXAMINED.

UGANDA : Serere (*J. Ford*).

Also recorded from Ghana (type data), and Congo (Kinshasa) (type data).

Polyrhachis spinicola Forel

Polyrhachis spinicola Forel, 1894 : 70. Syntype workers, ♀, MOZAMBIQUE : Delagoa Bay (*Junod*) (MHN, Geneva).

Polyrhachis cubaensis subsp. *gallicola* Forel, 1894 : 71. Syntype workers, ♀, MOZAMBIQUE : Delagoa Bay (*Liengme*) (MHN, Geneva) [examined]. **Syn. n.**

Worker. TL 6·1–7·0, HL 1·62–1·78, HW 1·33–1·48, CI 82–86, SL 1·70–1·78, SI 120–127, PW 1·11–1·24, MTL 1·72–1·75. (15 measured.)

Anterior clypeal margin arcuate and entire. Eyes hemispherical, weakly to strongly protuberant. Sides of head in front of eyes convex and convergent anteriorly. Alitrunk marginate throughout its length, with a distinct transverse carina or ridge separating the dorsum of the propodeum from the declivity. Pronotum bispinose; propodeum with a pair of spines or teeth which are curved outwards in dorsal view. Declivity of propodeum strongly concave. Promesonotal suture weakly arched, poorly developed; metanotal groove very weakly developed, represented only by a line which breaks the sculpturation. Petiole armed with four spines of variable length, usually with the dorsal pair slightly longer than the lateral, but sometimes of about the same length. Spines curved over and around the base of the first gastral segment which is concave in the middle of its anterior face.

Erect hairs absent from all dorsal surfaces of the body except for the anterior portion of the clypeus and the apex of the gaster. Pubescence weakly developed, most distinct on the legs and antennae.

Clypeus finely reticulate; dorsum of head finely reticulate-rugose, the interspaces reticulate-punctate. Sculpturation of dorsum of alitrunk similar to that of the head but varying in intensity. In a series from the same nest the pronotal sculpturation varies from finely and densely punctate with a weak overlying longitudinal rugulation to distinctly reticulate-rugose with punctate interspaces. The rugulation is usually noticeably more coarse on the mesonotal and propodeal dorsa than on the pronotal dorsum. Declivity of propodeum superficially reticulate and smooth. Gaster finely and densely reticulate-punctate. Colour black, with femora, tibiae and apices of tarsal segments red-brown or yellow-brown. Antennae usually brown-black at the bases of the funiculi but tending to become deep red-brown apically.

Female answering to the above description except in the development of the alitrunk and in the following respects; dorsal pair of petiolar spines often strongly recurved posteriorly at their apices and somewhat hook-like. All forms occur between the usual worker pattern and a distinct small hook. Sculpturation of the mesoscutal dorsum may be reduced to fine, dense, longitudinal striae with interstitial reticulate-puncturation and with scattered, larger pits, these last usually on the posterior half of the sclerite. Alate females have been recorded as follows, SOUTH AFRICA : January, February.

Subspecies *gallicola*, originally linked with *cubaensis*, is in fact a straight synonym of *spinicola*. The original description gives no indication of this but when Forel (1910*b* : 30) was comparing his *gallicola* specimens to *wilmsi* he noted that the median propodeal tooth was absent from the former but present in the latter. As *spinicola* and *gallicola* were described at the same time there is a possibility that the error arose due to mislabelling of the series of the various specimens.

The species has been recorded by Arnold (1924 : 752) as being found in acacia thorns, and is also known from collections of ants found in citrus trees. It is not clear whether the ants nest in the acacias.

MATERIAL EXAMINED.

KENYA : Kibwesi (*H. C. Hopton*). MOZAMBIQUE : Chibababa (*C. F. M. Swynnerton*); Delagoa Bay (Forel coll.). SOUTH AFRICA : Natal, Durban (*G. Arnold*) (*C. B. Cooper*) (*H. Marley*); Algoa Bay (*Brauns*); Mossel Bay (*R. E. Turner*); Mfongosi (*G. Arnold*).

Also recorded from Angola.

Polyrhachis viscosa F. Smith

(Text-figs 7, 13, 22, 39)

Polyrhachis viscosa F. Smith, 1858 : 71, pl. 4, fig. 41. Holotype worker, SOUTH AFRICA : Natal, Durban (BMNH) [examined].

Polyrhachis antinorii Emery, 1877 : 365. Syntype workers, ETHIOPIA : Sciotel, Keren (*Beccari*) (probably in MCSN, Genoa).

Polyrhachis viscosa var. *spretula* Santschi, 1923 : 294. Syntype workers, ♀, CONGO (KINSHASA) : Kasai, Dumbi, 6.x.1921 (*H. Schouteden*) (MRAC, Tervuren) [examined]. **Syn. n.**

Polyrhachis cubaensis subsp. *imatongica* Weber, 1943 : 388, pl. 16, fig. 22. Syntype workers, SUDAN : Imatong Mts, east slopes, 3800–4000 ft, 24.vii.1939 (*N. A. Weber*) (MCZ, Boston) [examined]. **Syn. n.**

Worker. TL 5·9–7·6, HL 1·56–1·96, HW 1·29–1·63, CI 80–86, SL 1·52–2·07, SI 119–135, PW 1·00–1·37, MTL 1·48–2·04. (30 measured.)

Clypeus usually with the anterior margin narrowly notched medially. Apex of scape greatly swollen in dorsal view, three or more times the width just distal of the basal neck and forming a hood which hides the base of the first funicular segment in dorsal view. First segment of funiculus dorsoventrally flattened basally. Eyes flat to weakly convex. Alitrunk marginate throughout its length. Promesonotal suture distinct; metanotal groove absent from or only very faintly present on the dorsal alitrunk, its location usually marked only by a weak indentation of the lateral margination or by a break in the sculpturation. Pronotal spines long and acute; propodeal teeth short, upcurved, connected by a transverse ridge running across the posterior margin of the propodeum, the ridge raised into a blunt tubercle medially. The size of this median propodeal tubercle is variable, being almost absent in small individuals, but occasionally as large as the propodeal teeth. Node of petiole with the lateral pair of spines long and directed upwards and backwards. Between them is a pair of shorter, acute spines of variable length. Anterior face of the first gastral segment concave medially.

Dorsum of alitrunk and gaster without erect hairs; all surfaces of body with a very sparse short, greyish pubescence, which may be absent.

Clypeus with a fine, longitudinal striation, loosely overlaid by fine shallow punctures. Head and alitrunk loosely and finely reticulate-rugose with the interspaces reticulate-punctate. Gaster finely and densely reticulate-punctate.

Female as worker, with the usual differences associated with the caste. Pronotal spines and propodeal teeth reduced, but often the median tubercle on the posterior propodeal margin is enlarged or double. Alate females have been recorded as follows, SUDAN : August.

Variety *spretula* was founded on a number of workers in which the dorsal pair of petiolar spines were considered by Santschi to be intermediate between *viscosa* and *nigrita*. As has been pointed out above, the dorsal spines of the petiole are variable in length and in fact, of the types of *spretula* examined, the majority were normal for *viscosa*. Of *imatongica* Weber states in the original description that the antennal scapes are, 'suddenly clavate distally'. Whilst this character is not developed in *cubaensis*, the species with which *imatongica* was associated, it is however diagnostic of *viscosa*. A direct comparison of types of the two forms assured the synonymy.

P. viscosa nests directly into sandy soil, usually in open localities. Foragers occur mostly on the ground but also ascend low bushes, trees and grass stems. A savannah and arid-zone species, it is interesting to note its occurrence on the coastal plains of Ghana as well as inland in the savannah proper.

MATERIAL EXAMINED.

GHANA : Nakong (*P. M. Room*); Tumu (*P. M. Room*); Mole Game Reserve (*J. C. Greig*); Kwabenya (*D. Leston*); Amfeda (*C. A. Collingwood*); Prampram (*C. A. Collingwood*); Legon (*D. Leston*). SUDAN : Darfur (*R. C. H. Sweeney*); Khor (*R. C. H. Sweeney*). TANZANIA : Duthumi (*A. Loveridge*). MALAWI: between Mangoche and Chikala Boma (*S. A. Neave*); Blantyre (*J. E. S. Old*); Mlanje (*S. A. Neave*); Kotakota (*C. Sweeney*). RHODESIA : Redbank (*G. Arnold*); Cawston Farm (*G. Arnold*). NIGERIA : Badeggi (*J. T. Medler*); Madaki (*M. G. Wood*). CONGO (KINSHASA) : Kwamouth (*H. Schouteden*).

Also recorded from Somali Republic, Ethiopia (type data), Kenya, Uganda, South Africa.

THE *REVOILI*-GROUP

Characterised by the partial or total loss of the margination of the alitrunk, the reduction or disappearence of the dorsal sutures of the alitrunk, and a tendency towards the reduction of sculpturation. All species in the group except *aenescens* have abundant long, erect hairs on all dorsal surfaces of the head and body, and a majority have long hairs on the appendages also.

This group is considered to have developed from the *viscosa*-group. In the important character of the loss of margination of the alitrunk a number of species are known which are intermediate between the groups of *viscosa* and *revoili*. The transition from a fully marginate to a completely immarginate condition is illustrated by the following series of species : *durbanensis*⟶*transiens*⟶*aenescens*⟶*otleti*⟶*regesa*⟶*revoili*. In the first species, a member of the *viscosa*-group, the alitrunk has complete margination. The second species shows complete margination of the pronotum whilst the mesonotum and propodeum are very weakly and obtusely margined, the latter more weakly so than the former. The propodeal margination is lost in *aenescens*, and in *otleti* only the pronotum retains margins. In *regesa* the pronotal margination is weak and only extends for part of the length of the segment. No trace of margination remains in the last species of the series.

The dorsal sutures of the alitrunk are very much reduced, especially the metanotal groove. Apart from *platyomma* in which it is distinct, the groove is represented in most species only by a very faint line which may fail to break the sculpturation in places. In *volkarti* the metanotal groove is completely absent, and in *khepra* both dorsal sutures are supressed. The pronotal spines decrease in size as one moves away from the species most similar to those in the *viscosa*-group and the intensity of sculpturation lessens, until in *braxa* the spines are represented by a pair of very small teeth and the integument is smooth and highly polished. In most species the sculpturation is similar to that found in the *viscosa*-group, that is, reticulate-punctate overlaid by rugulation or a rugoreticulum.

Propodeal armament is variable; in some species a pair of upcurved teeth are present but in others these are reduced to tubercles or are entirely absent. A modification found in some species of the group is the development of transverse propodeal ridges which separate the dorsum from the declivity. In all species where these ridges are present they are incomplete medially, with a small but distinct gap between them.

The petiole follows the pattern described for the *militaris* complex, the majority of species having a pair of long dorsal spines with a smaller lateral pair. The latter tend to be diminished in size in certain species and only a pair of minute teeth or tubercles remain in species such as *lanuginosa* and *khepra*.

Some of the earlier described species of the *revoili*-group were placed by Emery (1925 : 206) in his subgenus *Pseudocyrtomyrma*, which he erected in 1921, designating *revoili* as the type-species. In fact, he included the following species in the subgenus : *alexisi*, *curta*, *kohli*, *lanuginosa*, *platyomma*, *revoili* and *spitteleri*. As is now understood, only the third to fifth named (the third being a synonym of *volkarti*) are close to *revoili*, whilst the rest have different affinities. That the subgenus was poorly defined at its inception is shown by the fact that *spitteleri* is included whilst *monista*, its closest relative, is not; *curta* is included whilst *maynei*, a synonym, was grouped with *laboriosa*; and *alexisi* was apparently included as it did not fit in with any other species known at that time. With the removal of these species one is left with the nucleus of the *revoili*-group as it is understood at the present time, but the existence of species intermediate between the *viscosa*-group and *Pseudocyrtomyrma*, and the other similarities with both the *viscosa*- and *militaris*-groups discussed above shows that the formal subgeneric name is untenable, and it is consequently relegated to synonymy (p. 288).

The distribution of the species of the *revoili*-group is mostly confined to the forested areas of West and Central Africa and Uganda. Only *revoili* itself is found outside this area, in eastern and southern Africa.

Polyrhachis aenescens Stitz

(Text-figs 15, 32)

Polyrhachis aenescens Stitz, 1910 : 151. Holotype worker, CAMEROUN (*Knobloch*) (MNHU, Berlin) [examined].

Worker. TL 6·2, HL 1·60, HW 1·26, CI 79, SL 1·92, SI 152, PW 0·96, MTL 2·01. (Measurement of HL is approximate as head of holotype is partially crushed.)

Median portion of anterior clypeal margin projecting as a broad, truncated lobe. The median longitudinal carina of the clypeus is strongest anteriorly and projects slightly. For this reason the clypeal margin may appear broadly V-shaped in full-face view. Eyes convex; sides of head in front of eyes shallowly convex, behind the eyes the sides round into the convex occipital margin. Pronotum very weakly and obtusely margined for about half its length, the margination best seen in lateral view. Mesonotum similarly but even more faintly margined throughout its length; propodeum not marginate. Dorsal surfaces of alitrunk convex; in side view the pronotum virtually flat, the mesonotum and propodeum sloping strongly to the declivity. Pronotum armed with a pair of small, triangular spines; propodeum with a pair of minute but broad teeth. Promesonotal suture represented only by a very faint line breaking the sculpturation. Metanotal groove even more poorly developed, visible only in certain illuminations and views. Petiole with a pair of long dorsal spines and a pair of minute lateral teeth.

Erect hairs absent from dorsal surfaces of body and from antennal scapes. Pubescence fairly dense, with a pale yellowish reflection on the pronotum, silvery grey on the gaster.

Sculpturation everywhere of a fine, dense reticulation. Colour black, the legs brown or orange-brown, with the tibiae lighter in colour than the femora.

This species is unique in the *revoili*-group as known at present as it has no erect hairs on the dorsal surfaces of the body, nor on the antennal scapes. In all other species of the group hairs are numerous, if not abundant. The species lies closest to *transiens* within the group, sharing a similar body form and an almost similar loss of alitrunkal margination. The lobe of the clypeus is notably broader in *aenescens*, the sutures of the alitrunk are fainter, and the lateral petiolar spines less distinct.

The original description of the species is misleading on a number of points; principally in that Stitz claims the pubescence to be, 'fine, golden-green and metallescent'. As described above the pubescence is pale yellowish on the pronotum and silver-grey on the gaster. It is possible that some of the colouration of the pubescence has faded since the species was originally described, but a change of this magnitude seems beyond credibility. Stitz also claims that a long tubercle is present on the dorsum of the alitrunk at the promesonotal junction, 'from which the surrounding surfaces of the back fall away outwardly in an arc'. Whilst it is true that the middle of the dorsum of the alitrunk at the promesonotal junction is the highest point in the outline, either in anterior or lateral view, the prominence cannot justifiably be termed a tubercle, as it is only part of the curvature of the dorsum, not set apart in any way.

Polyrhachis braxa sp. n.

(Text-figs 50, 56)

Holotype worker. TL 5·7, HL 1·29, HW 1·18, CI 91, SL 1·52, SI 129, PW 1·11, MTL 1·52.

Mandibles with five teeth; anterior clypeal margin arcuate and entire. Eyes weakly convex, situated close to the posterior corners of the head in full-face view. Sides of the head in front of the eyes shallowly convex; behind the eyes rounding almost immediately into the convex occipital margin. Head on each side with a short but distinct longitudinal groove terminating in a pit-like depression posteriorly; best seen in full-face view with the light incident upon the side of the head. This structure is situated close to the external margin of the antennal insertion, its total length about equal to the diameter of the antennal socket. Alitrunk not marginate, the dorsum transversely convex and everywhere rounding into the sides. Pronotum armed with a pair of very small, blunt teeth. Promesonotal suture and metanotal groove present but represented only by very weakly incised lines, the latter less well developed than the former. Propodeum with a pair of minute tubercles, considerably smaller than the prominences bearing the spiracles; declivity of propodeum between these tubercles and the spiracular openings concave. Petiole thick and strongly biconvex in lateral view; in front view equipped with a pair of widely separated, straight spines dorsally, which are subtended by a pair of lateral teeth. The dorsum of the petiole between the spines straight and more or less flat. Anterior surface of first gastral segment shallowly concave medially to receive the posterior face of the petiole.

Head, alitrunk, gaster and appendages with numerous erect, pale, off-white hairs. Pubescence sparse and greyish, most dense on the sides of the alitrunk and on the petiole. On the pronotum the pubescence is densest dorsally in a transverse band running across the segment just in front of the promesonotal suture.

Entirety of head, alitrunk, gaster devoid of sculpturation except for a very fine superficial reticulation and the pits from which the hairs arise. The whole body shining. Petiole more dull and reticulate-punctate, but weakly so, the sculpturation partially hidden by the pubescence. Colour black, shining; the legs dark brown and the apical segments of the funiculus yellow-brown.

Two paratype workers, similar to the holotype but in one the pronotal teeth are better developed and more acute than in the holotype, the gaster is dark brown in colour and the legs are lighter brown. Dimensions: TL 5·7–5·9, HL 1·29–1·34, HW 1·18–1·22, CI 91, SL 1·52–1·56, SI 128–129, PW 1·11–1·13, MTL 1·52–1·56.

Holotype worker, GHANA : Eastern Region, CRIG, New Tafo, on cocoa tree, 4.iii.1970 (*C. A. Collingwood*) (BMNH).

Paratypes. Two workers, same data as holotype (BMNH).

The species appears to be related directly to *revoili* as it possesses an arcuate clypeal margin without a rectangular and truncated lobe, and a pair of tubercles upon the propodeum as opposed to a pair of ridges. It is however separated from *revoili* and from all other species of the group by the presence of the facial groove outside the antennal insertion, the reduced pronotal armament, and the lack of raised or incised sculpturation on any part of the head capsule, alitrunk or gaster. Superficially *braxa* resembles some members of the *rastellata* (Latreille) species-group of the Indo-Australia regions.

Polyrhachis khepra **sp. n.**

(Text-figs 51, 57)

Holotype worker. TL 5·6, HL 1·26, HW 1·00, CI 79, SL 1·44, SI 144, PW 0·89, MTL 1·34.

Mandibles with five teeth; anterior clypeal margin with a shallow, truncated rectangular lobe which is difficult to see because of the abundant hairs. Eyes convex; the sides of the head in front of the eyes weakly convex and somewhat convergent; behind the eyes the sides rounding into the evenly convex occipital margin. Alitrunk not marginate, the dorsal surface transversely and longitudinally convex. Dorsum of alitrunk smooth, without a trace of sutures. Pronotum armed with a pair of minute teeth; propodeum unarmed, the dorsum rounding into the sloping and shallowly concave declivity. Petiole with a narrow, longitudinal, keel-like ventral process. Petiole armed above with a pair of dorsal spines and these are subtended by a pair of small lateral teeth. Anterior face of first gastral segment not concave.

Entirety of head, body and appendages densely clothed with long, erect, fine hairs, which are either curved or sinuate and are yellowish in colour. Pubescence long, grey and sparse, most abundant on the sides of the alitrunk and on the appendages.

Clypeus unsculptured. Dorsum of head finely and densely rugose longitudinally, distinctly reticulate-rugose in the space separating the eye from the frontal carina on each side. Dorsum of pronotum and propodeum unsculptured apart from the pits from which hairs arise, but the mesonotum with a few small, scattered, almost effaced longitudinal rugulae. Laterally the alitrunk with some fine reticulate-rugulation which is more or less confined to the lower halves of the mesopleuron and the sides of the pronotum. Anterior surface of petiole roughened, the sculpturation more or less concealed by the pubescence; the posterior face rugose. Gaster sculptured as propodeum but also with traces of a fine superficial reticulation, almost effaced. Colour black, the alitrunk and gaster polished, the head somewhat more dull. Femora black, tibiae and tarsi brown. Antennal funiculae yellow-brown, especially towards the apex.

The single paratype worker as the holotype but smaller; TL 5·2, HL 1·20, HW 0·96, CI 80, SL 1·38, SI 148, PW 0·85, MTL 1·26.

Holotype worker, GHANA : Eastern Region, Kibi, 24.iii.1970 (*P. M. Room*) (BMNH).

Paratype worker, same data as holotype (BMNH).

This small species is related to *otleti* and *regesa*, from which it may be distinguished by the very reduced sculpturation, the lack of sutures upon the dorsum of the alitrunk and the lack of propodeal armament. The abundant long hairs are similar to those of *lanuginosa*, as is the overall body shape, but in *lanuginosa* the anterior clypeal margin is arcuate and entire, without a truncated lobe, and the dorsum of the alitrunk is rugose everywhere.

Polyrhachis lanuginosa Santschi

Polyrhachis lanuginosa Santschi, 1909 : 394, fig. 17. Syntype workers, CONGO (BRAZZAVILLE) : Mindouli (*A. Weiss*) (NM, Basle) [examined].

Polyrhachis lanuginosa subsp. *santschii* Emery, 1921 : 24. Holotype ♀, CAMEROUN. [Nom. preocc. (not *santschii* Mann).]

Polyrhachis lanuginosa subsp. *conradti* Santschi, 1923 : 293. [Nom. substit. for *santschii* Emery.] **Syn. n.**

Polyrhachis lanuginosa subsp. *felici* Emery, 1925 : 206. [Nom. substit. for *santschii* Emery.] **Syn. n.**

Worker. TL 5·9–6·1, HL 1·52–1·59, HW 1·26–1·29, CI 79–84, SL 1·76–1·78, SI 132–138, PW 1·11–1·15, MTL 1·70–1·78. (2 measured.)

Anterior clypeal margin arcuate and entire. Eyes convex, sides of head in front of eyes gently convex, somewhat convergent anteriorly; behind the eyes the sides rounding into the convex occipital margin. Alitrunk convex, not marginate. Pronotum armed with a pair of short spines, directed outwards and slightly forwards. Promesonotal suture distinct, arcuate; metanotal groove extremely faint, barely breaking the sculpturation on the dorsum. In profile the propodeum appears to be armed with a pair of upcurved teeth but in dorsal view these are resolved as a pair of short, transverse ridges, interrupted medially by a small gap where the propodeal dorsum curves into the declivity. Petiole with a pair of long dorsal spines and a lateral pair of small teeth. Anterior surface of first gastral segment concave medially.

Entire body abundantly clothed with long, curved or sinuate, yellow-white, erect hairs. Pubescence long and greyish in colour, most abundant on the appendages and gaster.

Clypeus and gaster finely reticulate. Head finely, longitudinally rugose with some reticulation, more distinctly reticulate-rugose in the space separating the eye from the frontal carina. Dorsum of alitrunk finely longitudinally rugose, more irregularly so on the pronotum than elsewhere. Laterally the alitrunk is reticulate-rugose. Colour black, the antennal funiculi yellow-brown, the tarsi dark brown or black.

Female. Originally described as a subspecies, but now accepted as the female of *lanuginosa*. The original description of the female gives a number of differences from the worker which are usual in the genus, namely that the female resembles the worker except for slight differences in sculpturation (finer), reduction in size of spines and teeth on the alitrunk, and the petiolar spines a little longer than in the worker.

The arcuate clypeal margin, lacking a rectangular, truncated lobe, relates this species to *revoili* and its immediate allies. It is distinguished by the abundant long hairs and the presence of transverse ridges on the propodeum as opposed to teeth. The numerous hairs on the species give it a superficial resemblance to *khepra*, but the latter lacks sutures on the dorsum of the alitrunk, and its pronotum and propodeum are unsculptured.

Polyrhachis otleti Forel

(Text-figs 16, 34)

Polyrhachis otleti Forel, 1916 : 449. Syntype workers, ♀, ♂, CONGO (KINSHASA) : St Gabriel (*H. Kohl*) (MHN, Geneva) [examined].

Worker. TL 6·8–7·6, HL 1·63–1·71, HW 1·33–1·37, CI 80–83, SL 1·88–2·00, SI 140–146, PW 1·13–1·23, MTL 1·89–1·96. (9 measured.)

Anterior clypeal margin projecting medially as a truncate lobe, the angles of which are acute. Middle of the margin of this lobe with a small notch. Eyes convex, sides of head in front of eyes weakly convex, convergent; behind the eyes rounding into the broadly convex occipital margin. Dorsum of alitrunk transversely convex. Pronotum armed with a pair of triangular spines and marginate throughout its length. Mesonotum more obtusely marginate, the marginations distinct only when viewed from certain angles. Propodeum not marginate. Promesonotal suture present as a weakly incised, arcuate line; the metanotal groove usually very indistinct, represented only by a faint scoring across the dorsum of the alitrunk. Propodeum armed posteriorly with a pair of transverse ridges which appear as small teeth in profile. The ridges fail to meet medially and there is a small but distinct gap through which the dorsum meets the declivity. Petiole with a pair of long dorsal spines and a pair of shorter, lateral spines. The anterior surface of the first gastral segment concave medially.

Entire body, including head, with numerous long, white hairs and a fairly abundant long pubescence.

Clypeus, propodeal declivity, petiole and gaster finely reticulate. Head finely rugose, longitudinally so on the vertex but more distinctly reticulate-rugose in the space separating the eye from the frontal carina on each side. Alitrunk dorsally very finely longitudinally rugose, the direction most distinct on the pronotum. Colour black, dull, the apices of the antennal funiculi and the tarsi brown or red-brown.

Female as worker apart from the usual differences associated with caste, the pronotal spines reduced.

In the original description Forel records that the nest was in a cleft in the bark of a tree, 8 cm long and 2·5 cm broad, covered by a linen thread mixed with vegetable matter. A nest found by the present author in Nigeria was approximately 5 ft above ground level in a narrow, deep rot hole in a tree being used as shade in a cocoa plot. The entrance was covered by a fibrous mat composed of silk mixed with small pieces of bark which extended for quite some distance around the entrance hole of the nest proper. A number of workers were resting on the bark of the tree under this mat and when the cover was broken ran out to investigate. Some specimens from Ghana collected by Dr D. J. Cross bear the label, 'In carton patch nest, on tree', which obviously refers to the same sort of structure.

MATERIAL EXAMINED.

GHANA : Tafo (*D. J. Cross*) (*C. A. Collingwood*). NIGERIA : Gambari (*B. Bolton*).

Polyrhachis platyomma Emery

Polyrhachis platyomma Emery, 1921 : 24, fig. 3. Holotype worker, CAMEROUN : 9.xi.1895 (*L. Conradt*) (MCSN, Genoa) [examined].

Worker. TL 6·1, HL 1·56, HW 1·37, CI 88, SL 1·85, SI 135, PW 1·40, MTL 1·81.

Anterior clypeal margin arcuate and entire, without a rectangular median lobe. Eyes flat, nearly concave, somewhat sunk into the sides of the head. Sides of head convex, rounding into the convex occipital margin behind the eyes. Alitrunk not marginate, the dorsum rounding into the sides. Pronotum armed with a pair of short, triangular, acute spines; the propodeum with a pair of small, upcurved teeth, between which the dorsum curves evenly into the declivity. Promesonotal suture represented only by a line which breaks the sculpturation, but the metanotal groove distinct and impressed. Dorsal surfaces of the alitrunk transversely convex; the pronotum notably broader than the propodeum. Petiole armed with a pair of long dorsal, and a pair of shorter lateral spines. Anterior surface of the first gastral segment concave medially.

Head, body and appendages with numerous long, erect hairs, yellowish to off-white in colour. Pubescence greyish, densest on the alitrunk.

Clypeus superficially reticulate, head regularly and finely longitudinally striate-rugose. Dorsum of alitrunk as head, but the rugae becoming disorganised on the mesonotum and propodeum. Sides of alitrunk finely reticulate-rugose apart from the propodeum which is longitudinally striate-rugose. Gaster finely and densely reticulate-punctate.

The species distinctly belongs to the *revoili*-group but is easily separated from all other constituent species by its possession of flattened eyes and an impressed metanotal groove. Nothing is known of the biology of this species, which as far as can be ascertained is known only from the single worker type.

Polyrhachis regesa sp. n.

(Text-figs 52, 58)

Holotype worker. TL 4·4, HL 1·14, HW 0·96, CI 84, SL 1·34, SI 139, PW 0·74, MTL 1·22.

Clypeus with a rectangular median lobe, the anterolateral angles of which are very acute, almost denticulate. Eyes convex; sides of head in front of eyes straight, behind the eyes gradually rounding into the convex occipital margin. Pronotum with a short, weak lateral margination extending back from the pronotal teeth, the margination not reaching the promesonotal suture. Remainder of alitrunk not marginate, the dorsum convex in both directions. Promesonotal suture present, narrow but distinct; metanotal groove absent from the dorsum of the alitrunk. Propodeum with a pair of minute tubercles, the dorsum rounding into the concave declivity between them. Petiole armed with a pair of spines dorsally and a pair of smaller lateral spines. Anterior face of first gastral segment concave medially.

Entirety of head, body and appendages with numerous erect, white hairs, those on the tibiae and scapes (especially the latter) notably longer than those on the dorsum of the gaster. Pubescence greyish, fine, least abundant on the head.

Clypeus finely reticulate-rugose, the rest of the head more coarsely so, especially in the space separating the eye from the frontal carina. Dorsum of alitrunk very finely reticulate and punctate-rugose; the gaster finely and superficially reticulate. Colour black, the alitrunk more dull than the gaster which is dully shiny. Antennal scapes and femora brown; funiculi, tibiae and tarsi yellow-brown.

A single paratype worker, as holotype but slightly larger; TL 4·8, HL 1·18, HW 0·96, CI 81, SL 1·41, SI 1·47, PW 0·81, MTL not measurable due to method of mounting of the specimen.

Holotype worker, GHANA : Eastern Region, Mampong, 12.iii.1970 (*P. M. Room*) (BMNH).

Paratype worker, GHANA : Eastern Region, Adeiso, by pyrethrum knock-down, sample C3/6, 17.vi.1970 (*D. Leston*) (UG, Legon).

Related to *otleti* and *khepra*, it is separable from the former by the presence of propodeal tubercles as opposed to ridges, and from the latter by marked differences in sculpturation and development of the sutures of the alitrunk.

Polyrhachis revoili E. André

Polyrhachis revoili E. André, 1887 : 285. Holotype ♀, SOMALI REPUBLIC (*Revoil*) (probably in MNHN, Paris).

Polyrhachis natalensis Santschi, 1914*b* : 41. Syntype workers, SOUTH AFRICA : Natal, Stamford Hill, 25.i.1905 (NM, Basle) [examined].

Polyrhachis revoili var. *donisthorpei* Forel, 1916 : 453. Syntype workers, ZAMBIA (probably in MHN, Geneva). **Syn. n.**

Worker. TL 6·1–6·5, HL 1·51–1·59, HW 1·44–1·48, CI 93–95, SL 1·63–1·66, SI 112–113, PW 1·40–1·48, MTL 1·66–1·70. (7 measured.)

Anterior clypeal margin arcuate and entire or with a very shallow, small median emargination. Eyes convex, the sides of the head in front of the eyes weakly convex and converging anteriorly. Behind the eyes the sides round into the very shallowly convex occipital margin. Alitrunk not marginate, transversely convex dorsally. The sutures reduced to faint lines; promesonotal suture rather better defined than the metanotal groove, which is not impressed. Pronotum very broad, more than twice the width of the propodeum measured across the teeth. Pronotum with a pair of short, acute spines of variable length, the propodeum with a pair of upcurved teeth. Petiole armed with a long pair of spines dorsally and a shorter, upcurved lateral pair. Anterior face of first gastral segment shallowly concave medially.

Head, body and appendages everywhere with abundant, erect, white to greyish hairs. Pubescence greyish and dense, partially or wholly concealing the sculpturation upon the dorsum of the alitrunk.

Head finely, longitudinally striate-rugose. Dorsum of the pronotum similar to head but rugae less distinct and with a tendency to meander. On the dorsa of the mesonotum and propodeum the rugae are disorganised or arranged into a fine, loose rugoreticulum. Gaster finely reticulate-punctate or superficially reticulate. Colour usually uniform black, dull, with the gaster shining. The head is usually more shiny than the alitrunk. Legs may be black, black-brown, or red-brown, and the antennal funiculi are often brown towards the apex.

Female as worker apart from the usual differences associated with caste. The pronotal spines and propodeal teeth are reduced; the latter may even be absent.

Some 22 years after André's original description of *revoili*, Santschi (1909) described a new species, *weissi*, based upon the worker caste. Later workers tended to treat *weissi* as a subspecies or variety of *revoili*, as indeed did Santschi himself in his later review of the *revoili* complex (Santschi, 1939). A number of other infraspecific names were appended to *revoili* between 1914 and 1939, and differing opinions were voiced concerning the actual status and relationships of these forms. Forel (1916) stated that he could not distinguish *revoili* from *natalensis*, and that *weissi* seemed to him to be only a variety with a more striated alitrunk. He added, however, that Santschi had pointed out several other differences between *weissi* and *revoili* in a letter. Forel then went on to describe the var. *donisthorpei*, for which there was less justification than Santschi's *natalensis*, later given as a synonym of *revoili* by Arnold (1924 : 754).

In his description of st. *balli* Santschi (1939) notes its similarities to *conduensis* and *weissi* and its differences from *natalensis*, which he appears to have retrieved from the synonymy. He then states his views on the *revoili* complex of infraspecific forms and concludes that *revoili* as described by Forel (1894) and Arnold (1924) were in fact *natalensis*, whilst the species noted by Forel (1916) was really *conduensis*.

The present study implies that *revoili* and *weissi* must be treated as separate although very closely related species. The characters used to separate them appear quite trivial, but are apparently consistent. Further study may show this premise to be incorrect but for the present the species emerge as indicated below.

P. revoili is a larger, noticeably more thickset species (PW 1·40 or more) with a distribution limited to the southern savannah and veldt regions. Erect hairs are more numerous everywhere (>30 on each antennal scape) and the pubescence is dense enough to hide the sculpturation of the alitrunk, at least in part. Of the constituent segments of the dorsal alitrunk only the pronotum is distinctly longitudinally rugose, whilst on the other surfaces the rugae are disorganised or a rugoreticulum is present. On the other hand, *weissi* is a smaller, more slender species (PW 1·26 or less) restricted to the forested areas of West and Central Africa. Erect hairs are more sparse (from none to about 10 on each scape) and the pubescence is fine and short, not masking the sculpturation. The entire dorsum of the alitrunk is sharply longitudinally rugose. On these separational characters the infraspecific names arrange themselves in the following synonymies:

weissi : = *conduensis*, = *balli*, = *crassa*, = *phaenogaster*.
revoili : = *natalensis*, = *donisthorpei*.

Santschi's (1939) grouping of infraspecific forms is more or less retained in the synonymies and Arnold's (1924) synonymy of *natalensis* with *revoili* is justified. The only remaining infraspecific name of *revoili* is the st. *volkarti*, which is now known to be the senior name of *P. kohli*, and is dealt with separately.

MATERIAL EXAMINED.

ZAMBIA : no loc. (*Rothney*). SOUTH AFRICA : Natal, Durban (*C. B. Cooper*); Natal (*Trägårdh*).

Also recorded from Somali Republic (type data).

Polyrhachis transiens **sp. n.**

(Text-figs 47, 59)

Holotype worker. TL 7·2, HL 1·63, HW 1·40, CI 86, SL 1·81, SI 129, PW 1·18, MTL 1·85. Anterior clypeal margin extended into a very narrow, truncated, subrectangular lobe; the margin on either side of the lobe gently concave. Eyes convex, situated on the posterior third of the side of the head. Sides of the head in front of the eyes shallowly convex, very gradually converging anteriorly. Behind the eyes the sides round rather abruptly into the shallowly convex occipital margin. Pronotum armed with a pair of spines, distinctly marginate between the spines and the promesonotal suture; the latter well developed, weakly incised across the dorsum. Mesonotum not distinctly marginate but with an obtuse angle between the dorsum and the sides, which is best observed in profile. Metanotal groove represented only by a faint line, which just breaks the dorsal sculpturation. Propodeum even more weakly and obtusely margined than the mesonotum, the lines followed by the angulations lying inside those of the mesonotal angulations and considerably less distinct. Propodeum armed with a pair of minute teeth which are slightly extended towards the centre of the segment but do not form a pair of ridges between the dorsum and the declivity. Petiole with a pair of long dorsal spines and a pair of lateral spines which are shorter and less stout. Anterior face of first gastral segment concave medially to accommodate the convex posterior face of the petiole.

All dorsal surfaces of head, body, and the antennal scapes with numerous short, fine, erect, greyish hairs. A short but dense greyish pubescence present on all surfaces of the body.

Clypeus finely and superficially reticulate. Head finely and densely striate-rugose longitudinally. Alitrunk similar to head but the rugae much finer and more dense, especially on the propodeal dorsum. Gaster very finely and densely reticulate-punctate. Colour black, the apical half of the antennal funiculi yellow-brown. Femora black-brown, the tibiae and tarsi dark brown.

Paratype workers as holotype, but with a range of dimensions: TL 7·0–7·4, HL 1·63–1·67, HW 1·29–1·40, CI 78–84, SL 1·70–1·89, SI 132–134, PW 1·14–1·21, MTL 1·76–1·93. (4 measured).

Paratype female answering to description of worker but with the usual differences associated with caste and with the pronotal margination reduced, extending only half the length of the segment. Angulation absent from the propodeum, the dorsum rounding into the sides. Pronotal spines and propodeal teeth reduced, the latter to a pair of minute, laterally extended ridges.

Holotype worker, UGANDA : Kampala, carton nest between citrus leaves over *Lepidasaphes* scale, no. 0427, 24.ix.1930 (*H. Hargreaves*) (BMNH).

Paratypes. 4 workers, 1 ♀, same data as holotype (BMNH). The species presents a condition between the *viscosa*- and *revoili*-groups, as is discussed above under the introduction to the *revoili*-group.

The carton referred to in the data on the type-series probably represents a mixture of silk, vegetable fragments and fungal hyphae, as is encountered in many other species. The presence of scale insects in the nest may be an artifact, but strongly suggests that scales play a part in the food requirements of this species.

Polyrhachis volkarti Forel **stat. n.**

(Text-figs 4, 17)

Polyrhachis revoili st. *volkarti* Forel, 1916 : 453. Holotype ♀, CONGO (KINSHASA) (*H. Kohl*) (MHN, Geneva) [examined].

Polyrhachis kohli Forel, 1916 : 454. Syntype worker, ♀, CONGO (KINSHASA) (*H. Kohl*) (MHN, Geneva) [examined]. **Syn. n.**

Worker. TL 5·9, HL 1·37, HW 1·00, CI 73, SL 1·81, SI 181, PW 0·89, MTL 1·70. Median portion of clypeus projecting anteriorly as a truncated, rectangular lobe. Head long and relatively narrow; the eyes strongly convex, almost hemispherical. Sides of head in front of the eyes weakly convex, somewhat convergent anteriorly. Alitrunk convex transversely, long and narrow, not at all marginate. Pronotum armed with a pair of short, triangular spines; the propodeum with a pair of short transverse ridges separating the dorsum from the declivity. The ridges do not meet medially and a small but distinct gap is present. Promesonotal suture represented by a faint line which just breaks the sculpturation; metanotal groove absent. Petiole armed dorsally with a pair of spines and laterally with a pair of teeth. Anterior face of the first gastral segment concave medially.

Entirety of head, body and appendages covered with abundant long, fine, erect hairs, some of which are curved or gently sinuate. Pubescence dense and greyish in colour.

Clypeus and gaster finely and densely reticulate; head and dorsum of alitrunk finely and densely longitudinally rugose, the rugae overlying a superficial reticulate-puncturation. Sides of the alitrunk with a fine rugoreticulum.

Female as worker but with the pronotal spines and propodeal ridges very much reduced, the latter to a pair of short, rounded prominences, best seen in posterior view. Sculpturation of the alitrunk finer, the longitudinal rugae of the alitrunk supressed in favour of the reticulate-puncturation.

A member of the *revoili*-group, *volkarti* is distinguished by its narrow build, truncate clypeal lobe, lack of a metanotal groove and presence of a pair of propodeal ridges. As far as is known the two type collections listed above represent the only specimens of this species.

To account for the fact that the same species was described twice in the same publication, once as a new species and then as a race of a second species, one can only assume that Forel was dealing with a split series and that he only gave cursory attention to the single female specimen which constituted his stirps *volkarti* whilst taking a greater interest in the worker specimen which had a female associated with it. If this was the case it is surprising that he did not himself notice the similarities between his descriptions of *volkarti* and *kohli*. For instance, in his description Forel notes that *volkarti* is 'much more slender than the type of the species' (i.e. *revoili*) and that, 'the head is much more narrow and elongate' and also that the 'anterior lobe (of the clypeus) is much longer than in the type'.

He also comments upon the great length of the scape as compared to *revoili*. These features ought to have indicated the similarities of the females of *volkarti* and *kohli*, and the differences between the former and the female of *revoili*.

Polyrhachis weissi Santschi

Polyrhachis weissi Santschi, 1909 : 395, fig. 18. Holotype worker, CONGO (BRAZZAVILLE) : Brazzaville (*A. Weiss*) (NM, Basle) [examined].

Polyrhachis revoili var. *conduensis* Forel, 1915 : 351. Syntype workers, CONGO (KINSHASA) : Kasai, Kondue (*E. Luja*) (MRAC, Tervuren) [examined]. **Syn. n.**

Polyrhachis revoili subsp. *crassa* Emery, 1921 : 23, fig. 2. Syntype worker, ♀, CAMEROUN : 1895 (*L. Conradt*) (MCSN, Genoa) [examined]. **Syn. n.**

Polyrhachis revoili subsp. *crassa* var. *phaenogaster* Emery, 1921 : 24. Syntype ♀♀, CAMEROUN (depository unknown). [Name not available.]

Polyrhachis revoili subsp. *balli* Santschi, 1939 : 10. Syntype workers, CONGO (KINSHASA) : Gazi, xii.1937 (*Beinaert*) (NM, Basle) [examined]. **Syn. n.**

Worker. TL 5·7–6·1, HL 1·40–1·48, HW 1·29–1·40, CI 88–95, SL 1·66–1·74, SI 124–125, PW 1·18–1·26, MTL 1·59–1·66. (15 measured.)

Anterior clypeal margin arcuate and entire. Eyes convex, the sides of the head gently convex and convergent anteriorly. Alitrunk not marginate, the dorsum convex. Promesonotal suture faint but distinct, the metanotal groove reduced to a line which only breaks the sculpturation. Pronotum very broad, more than twice the width of the propodeum measured across the teeth. Pronotum armed with a pair of short, acute spines of somewhat variable configuration; the propodeum with a pair of small, upcurved teeth. Petiole with two pairs of spines, the dorsal pair long and acute, the laterals much shorter and weakly upcurved. Anterior face of the first gastral segment shallowly concave medially.

Head and body with numerous erect hairs, white to grey in colour. Hairs very sparse or absent from the antennal scapes. Pubescence everywhere sparse, short, greyish in colour, nowhere concealing the underlying sculpturation.

Head and entire dorsum of alitrunk finely, longitudinally striate-rugose. Gaster finely and superficially reticulate. Colour uniform black, or with the appendages somewhat lighter, either dark brown or red-brown. Antennal funiculi usually with the apical five or six segments light brown.

Female as worker but with the pronotal spines reduced to mere teeth and the propodeal teeth minute or absent. The sculpturation of the mesoscutum tends to be notably finer than that of the head. Alate females have been recorded as follows, GHANA : July.

The affinities of *weissi* lie with the *revoili*-group, and this species is actually the closest known relative of *revoili*. The two species may in fact be inseparable and this and the synonyms of the two are discussed in more detail under *revoili*, where notes on the separation of the two are given.

P. weissi may be regarded as the forest equivalent of *revoili*, which appears to be confined to savannah and veldt regions. Nests of silk and vegetable particles are constructed under leaves or between contiguous leaves which are gummed together by the silk. A small nest dissected at CRIG, New Tafo in July 1970 by P. M. Room contained seven workers, six females (all alate), five males, and 32 brood (larvae and pupae).

MATERIAL EXAMINED.

GHANA : Tafo (*G. S. Cotterell*) (*P. M. Room*); Aburi (*P. M. Room*); Berekuso (*P. M. Room*); Akuadom (*A. H. Strickland*).

Also recorded from Cameroun (type data), Congo (Kinshasa) (type data), and Congo (Brazzaville) (type data).

THE *MONISTA*-GROUP

The two species constituting this group are characterised by their lack of margination on the alitrunk, the great development of the metanotal groove and the presence of coarse, usually yellowish bristles on the dorsal surfaces of the head and body. The sculpturation consists of a fine, dense striation on the head and alitrunk and a fine reticulation or reticulate-puncturation on the gaster. The propodeal spines are well developed and nearly or quite as long as those on the pronotum.

The group appears to be derived from the *militaris*-group and this view is supported by the form of the petiole which is very similar to that found in *fissa*, with the lateral spines rather better developed than the dorsals. In *monista* itself the promesonotal suture has developed into a very broad, deep cleft so that the mesonotum in profile stands out as an isolated, subtriangular block. In *spitteleri* the sutures are much less developed and the species is rather *fissa*-like apart from the lack of margination on the alitrunk and the very elongate propodeal spines.

The distribution of the two species is limited to forested areas, particularly in West and Central Africa.

Polyrhachis monista Santschi

(Text-figs 18, 28)

Polyrhachis monista Santschi, 1909 : 398, fig. 20. Holotype ♀, CONGO (BRAZZAVILLE) (probably in NM, Basle).

Worker. TL 5·5–6·4, HL 1·27–1·52, HW 1·22–1·41, CI 88–94, SL 1·40–1·59, SI 113–120, PW 0·96–1·04, MTL 1·40–1·74. (9 measured.)

Anterior clypeal margin arcuate and entire. Sides of head in front of the strongly convex eyes converging anteriorly, almost straight. Alitrunk not marginate, the dorsal surfaces of the pronotum and propodeum rounding evenly into the sides. Pronotum and propodeum each armed with a pair of thick spines, those of the pronotum directed outwards and upwards, those of the propodeum somewhat shorter and upcurved. Pronotum separated from mesonotum by a very deep broad groove. Mesonotum and propodeum similarly separated, the direction of the groove slanting forwards in profile so that its base meets the base of the promesonotal groove above the anterodorsalmost point of the mesopleuron. A welt bearing the mesothoracic spiracle projects from the base of the groove posteriorly. Petiole with four spines, the lateral pair slightly longer than the dorsal pair; all the spines curved backwards towards the base of the gaster. Median portion of anterodorsal border of the first gastral segment with a sharp, transverse margin separating the concave anterior face from the convex dorsal face.

Coarse, erect hairs present on all dorsal surfaces, varying in colour from white through straw-yellow to pale brown. Hairs strongly curved posteriad on the dorsum of the anterior half of the first gastral segment. Pubescence everywhere sparse or absent, densest on the pleurae.

Basic sculpturation of the head and alitrunk of fine, dense striation, longitudinal on the dorsum of the head, more or less longitudinal on the pronotal dorsum but tending to diverge posteriorly and following the curve of the sclerite, so that they are oblique on the sides of the pronotum. Striation transverse on the mesonotum, broadly V-shaped on the propodeum. Gaster with a fine, superficial reticulation, smooth and highly polished. Colour black, the colour of the extremities variable. In the majority of specimens the antennal funiculi become lighter apically, almost yellow in some smaller individuals but usually brown. Femora usually brown-black but may be paler, in one very small specimen from Nigeria the tibial apices are a deep red-brown.

Female in general very much like the worker but the adaptations of the alitrunk seen in, and so diagnostic of the worker are much reduced in the present caste. The promesonotal suture is well developed, but does not form a broad, deep groove as in the worker, whilst the developed metanotum more or less fills the posterior groove, but still leaves enough space for a deep, narrow trench between itself and the propodeum.

The species is separated from its closest relative, *spitteleri*, by the absence of a deep promesonotal groove and the presence of a prominence between the propodeal spines in the latter species.

P. monista nests and forages arboreally. The nests are a mixture of silk and vegetable particles, often enclosed between a pair of leaves. Forel (1916 : 452) reported a carton nest built inside a rolled-up leaf.

MATERIAL EXAMINED.

NIGERIA : Ibadan (*J. Cloudsley-Thompson*) (*R. H. Booker*). UGANDA : Kasokwa (*H. Hargreaves*).

Also recorded from Ghana, Congo (Brazzaville) (type data) and Congo (Kinshasa).

Polyrhachis spitteleri Forel

(Text-figs 19, 29)

Polyrhachis spitteleri Forel, 1916 : 450, fig. 6. Holotype worker, CONGO (KINSHASA) (*H. Kohl*) (MHN, Geneva) [examined].

Worker. TL 4·8–5·6, HL 1·14–1·37, HW 1·00–1·22, CI 87–89, SL 1·21–1·40, SI 114–121, PW 0·81–0·96, MTL 1·26–1·52. (5 measured.)

Anterior clypeal margin arcuate, entire. Eyes convex, the sides of the head converging in front. Alitrunk not marginate, the sides rounding evenly into the dorsum. Pronotum armed with a pair of spines; propodeum with a pair of long, curved spines, between which is a median dorsal tubercle or prominence. In the type specimen this prominence is low, but in other specimens it is higher and distinct. Between this median prominence and the spine on either side the propodeal dorsum rounds into the declivity. Promesonotal suture distinct and incised, but shallow. Metanotal groove broad and impressed. Petiole with four spines of approximately equal size, the laterals tending to be somewhat longer and more stout than the dorsals. Anterior face of the first gastral segment concave medially.

Thick, yellowish hairs with a waxy appearance abundant on the dorsum of the alitrunk; most dense on the mesonotum. Similar hairs are present on the gaster, but those on the head are usually shorter and paler in colour.

Clypeus, head to level of eyes, and gaster reticulate-punctate, the last more coarsely so than the head. Remainder of head longitudinally striate-rugose. Dorsum of alitrunk longitudinally striate-rugose, noticeably more coarsely so than on the head; the rugae of the mesonotum and more especially the propodeum tending to converge posteriorly. Sides of pronotum sculptured as dorsum but the pleurae, sides of propodeum and declivity of the latter covered with a fine rugoreticulum. Colour black, the appendages usually lighter, black-brown or dark brown.

Very closely related to *monista*, this species is easily separated by the presence of a median propodeal prominence between the spines, and the slight development of the promesonotal suture in the species as compared to the broad, deep cleft noted in *monista*. In the original description Forel failed to notice the presence of the median propodeal prominence, and although this is smaller in the type than in the Ghanaian material examined, it is still quite distinct.

The nesting behaviour of *spitteleri* is not known, but that it is completely arboreal in habit is suggested by its collection in pyrethrum knock-down samples from trees when it has not been found by more normal collecting methods in the same area.

MATERIAL EXAMINED.

GHANA : Kade (*D. Leston*).

Also recorded from Congo (Kinshasa) (type data).

THE *ALEXISI*-GROUP

The medium sized to small species making up this group are easily recognised by their very short, broad and deep alitrunks. The pronotum is always marginate, at least for part of its length, but the mesonotum, propodeum, or both, may lack margination. On the head the anterior clypeal margin is equipped with a shallow, rectangular lobe which terminates laterally in a pair of acute, dentiform angles or is flanked by a pair of small teeth. The eyes are usually situated high up on the sides of the head, usually not breaking the outline of the sides in full-face view.

The promesonotal suture is invariably present but the metanotal groove is reduced to a faint line or is absent. Propodeal margination varies from fully marginate both laterally and posteriorly as in *latharis* and *limitis* to a situation in which the propodeum is totally without margination, as in *curta* and *alexisi*. Another species, *lestoni*, seems to occupy an intermediate position as the lateral propodeal marginations are missing whilst the posterior is present. In all species the propodeum is unarmed, there being no trace of spines or teeth.

The petiole is equipped with two or four teeth or spines in the various species but the basic shape of the segment is a thick, high scale with an acute dorsal margin and with four spines, of which the dorsals are longer than the laterals. Away from this, the most common form, one has on the one hand *lestoni* which retains only the lateral armament of the petiole as a pair of teeth, and on the other hand *curta* which has retained only the dorsal pair as two long hooks. Erect hairs are usually absent except on the anterior clypeal margin and the gastral apex, but in some species a few may be present on the dorsum of the head.

The affinities of this small group are not immediately apparent. No intermediate forms are known but a derivation from the *militaris*-group is suspected because of the structure of the alitrunk and petiole. All species are arboreal, and their distribution is limited to the rain forests of West and Central Africa.

Polyrhachis alexisi Forel

(Text-figs 20, 31)

Polyrhachis alexisi Forel, 1916 : 455, fig. 7. Syntype workers, CONGO (KINSHASA) (*H. Kohl*) (MHN, Geneva) [examined].

Worker. TL 4·8, HL 1·19, HW 1·00, CI 84, SL 1·26, SI 126, PW 0·89, MTL 1·26.

Median portion of anterior clypeal margin projecting as a shallow, rectangular lobe, ending laterally in a pair of acute denticles. Sides of the head straight to weakly concave in front of the eyes, gradually converging anteriorly. Eyes convex, just breaking the outline of the sides of the head in full-face view. Alitrunk short, broad, convex dorsally. Pronotum armed with a pair of short spines, marginate for about half the distance between the base of each spine and the promesonotal suture. Remainder of alitrunk not marginate, the dorsum rounding without interruption into the sides. Promesonotal suture shallow but distinct, metanotal groove absent. Propodeum unarmed, the dorsum rounding into the declivity, the two surfaces not separated by a transverse ridge or margin. Declivity of propodeum very deep, concave in profile. Petiole with a pair of dorsal spines and a pair of lateral teeth. Anterior surface of the first gastral segment concave medially.

Erect hairs absent except on the clypeus, mandibles, and gastral apex. Pubescence extremely short and sparse.

Clypeus and gaster finely reticulate. Head finely, longitudinally striate. Dorsum of alitrunk with an exceedingly fine and dense striation overlying a superficial reticulation. In dorsal view the striae are longitudinal and somewhat arched on the pronotum, divergent on the mesonotum and posteriorly convergent on the propodeum. Sides of alitrunk finely reticulate apart from the propodeum which is striate as the dorsum. Colour black, the appendages brown, and with the antennal funiculi yellow-brown.

The species is apparently known only from the type collection. It is distinguished from its relatives by the development of the petiolar spines and the complete lack of propodeal margination.

Polyrhachis curta E. André

(Text-figs 21, 25)

Polyrhachis curta E. André, 1890 : 312. Holotype worker, SIERRA LEONE (probably in MNHN, Paris).

Polyrhachis maynei Forel, 1911 : 282. Holotype worker, CONGO (KINSHASA : Congo de Lemba (*R. Mayné*) (MRAC, Tervuren) [examined]. **Syn. n.**

Polyrhachis lyrifera Stitz, 1933 : 78, fig. 5a, 5b. Holotype worker, CAMEROUN : Bakossigeb, 16.ii.1920 (*H. Schulz*) (MNHU, Berlin). **Syn. n.**

Worker. TL 7·4–7·6, HL 1·70–1·77, HW 1·52–1·78, CI 89–100, SL 2·07–2·11, SI 118–136, PW 1·48–1·74, MTL 2·00–2·04. (2 measured.)

Anterior clypeal margin arcuate, with a pair of minute denticulae which form the borders of an extremely shallow median lobe. Sides of head convex posteriorly, tending to be more straight and somewhat convergent in front of the eyes. Eyes situated well up on the sides of the head, not breaking the outline of the sides in full-face view. Pronotum armed with a pair of spines, marginate between the base of each spine and the distinct promesonotal suture. Mesonotum marginate from the promesonotal suture almost to the junction with the propodeum. Metanotal groove absent, replaced by an angle which separates the mesonotum from the very oblique dorsal surface of the propodeum. Propodeum not marginate, unarmed, the dorsum very oblique and sloping into the vertical and weakly concave declivity. In front view the sides of the petiole diverge from the base, pass through a rounded angle and then converge dorsally to the bases of a pair of curved spines. The spines rise almost vertically from the dorsum of the petiole and then curve outwards and somewhat backwards, giving the petiole a lyre-like appearance. There are no lateral teeth or spines. Anterior face of the first gastral segment very deep and concave.

Erect hairs absent from all dorsal surfaces except the clypeus, gastral apex, and one or two pairs on the vertex. Pubescence everywhere short and yellowish grey in colour.

Sculpturation everywhere of a fine, dense reticulation.

Female answering to the above description, but with the expected modifications of the alitrunk. The propodeum is more orthodoxly shaped than in the worker, having a definite, convex dorsal surface, which rounds into the declivity. Pubescence is rather more dense than in the worker, and the dorsal sclerites of the mesothorax have a few erect hairs, particularly on the mesoscutellum. A recently dealate female was recorded in Ghana in April.

This very distinctive but rare species seems to have been found on only six or seven occasions, in each case a single worker or female being captured. On three of these occasions the species was described as new. The form of the head, alitrunk, and especially the petiole render specimens very easily identifiable, in fact, the petiolar structure is unique.

The single worker and female in my possession and the holotype of *maynei* were compared in turn with the descriptions of *curta*, *maynei*, and *lyrifera* and were found to fit each of them. *P. maynei* was originally separated from *curta* on the grounds that the former lacked a prosternal tooth, had a mesosternal tooth, and had the front of the propodeum making a part of the dorsum of the alitrunk. Forel did not see any specimens of *curta* before describing *maynei*, and he appears to have misinterpreted some of André's terms. For instance, André stated that in *curta* the 'sides of the prosternum (i.e. pronotum) terminating below in two strong, blunted, triangular teeth', which probably refers to the strongly triangular shape of the lateral pronotum, apex downwards, rather than to the presence of distinct and separate teeth. Forel, however, seems to have taken the statement at face value and says that no such teeth are present in *maynei*.

Conversely, Forel claims a mesosternal tooth to be present in *maynei*, which is not mentioned in the original description of *curta*. In this case the position of the middle coxae and the method of mounting the specimen determines whether or not the tooth (actually it appears to be the end of a transverse ridge separating the pro- and mesothorax ventrally) is visible.

As for the question of whether the propodeum constitutes a part of the dorsal alitrunk, Forel states that for *maynei* the propodeum, 'forms a single boss with the mesonotum', and later, 'the front of the epinotum (i.e. propodeum) making a part of the thoracic dorsum'. For *curta*, André had written that the propodeum, 'does not form a part of the thoracic dorsum. That is to say that the basal (i.e. dorsal) face and the declivity form a plain, at first very oblique, then vertical'. Both statements are in fact correct and are describing the same character from two different points of view. Immediately behind the angle separating the mesonotum from the propodeum the latter falls steeply away to the declivity proper, from which it is not at all separated. Forel obviously regarded this sloping part of the propodeum as part of the dorsum, whilst André chose to regard it as a continuation of the declivity.

In the case of *lyrifera*, Stitz's description and figures are good enough to recognise the species at a glance, and one can only assume that he was ignorant of the previously published descriptions. This contention is supported by the fact that he differentiates his *lyrifera* from *alexisi*, but not from *curta* or *maynei*. Santschi (1939 : 13) treated *lyrifera* as a variety of *curta*, and the name is now relegated to the synonymy.

The two specimens before me were both collected by pyrethrum knock-down from the forested regions of Ghana. The previous captures of the species show that it ranges throughout the rain forest areas of the continent but is very uncommon. Previous authors make no mention of the nesting site of the species, and nothing is known of its biology save that it is arboreal.

MATERIAL EXAMINED.

GHANA : Bunso (*C. A. Collingwood*); Yakasi (*D. Leston*).

Also recorded from Sierra Leone, Cameroun (type data) and Congo (Kinshasa) (type data).

***Polyrhachis latharis* sp. n.**

(Text-figs 49, 60)

Holotype worker. TL 6·5, HL 1·45, HW 1·19, CI 82, SL 1·59, SI 133, PW 1·37, MTL 1·52.

Mandibles with five teeth. Anterior margin of clypeus projecting medially as a shallow, rectangular lobe, the corners of which are minutely dentate. Between these small teeth is a notch flanked by two denticles. Head broadest posteriorly, the sides converging in front. Sides of head convex behind level of eyes, weakly concave in front. Eyes convex, set well up on the sides of the head close to the frontal carinae and not breaking the outline of the sides in full-face view. Alitrunk antero-posteriorly compressed and expanded laterally, giving a swollen and foreshortened appearance in dorsal view. Pronotum armed with a pair of short spines, marginate for about half its length and with the dorsal surface strongly convex. Mesonotum not marginate, separated from the pronotum by the promesonotal suture which is represented by a break in the sculpturation. Propodeum unarmed, marginate laterally and with a weak transverse ridge separating the dorsum from the declivity. Metanotal groove represented only by a faint scoring across the sculpturation of the dorsum. In dorsal view the sides of the propodeum are expanded so that the total width of the segment is noticeably greater than the width between the lateral marginations. Declivity of propodeum very deep, shallowly concave. Scale large in proportion to alitrunk, equipped with four short spines. The dorsal pair are directed upwards, outwards and backwards, and the length of each spine is less than half the length separating them along the dorsal edge of the scale. The lateral pair of spines are smaller than the dorsals, and are dentiform. Anterior face of first gastral segment strongly concave.

Erect hairs absent from all dorsal surfaces of head, alitrunk and gaster. A very sparse, short pubescence present on all surfaces, difficult to see at low magnifications.

Clypeus, declivity of propodeum and gaster finery reticulate. Head and dorsal surfaces of alitrunk longitudinally striate-rugose, the rugae less regular on the pronotum and tending to a disorganised rugoreticulum laterally. Mesonotal rugae diverging posteriorly. Sides of pronotum and mesopleuron reticulate-rugose; sides of propodeum striate-rugose as the dorsum. Colour black, with the antennal funiculi yellow-brown.

Paratype workers as holotype, but with the following range of dimensions: TL 6·5–7·0, HL 1·40–1·46, HW 1·19–1·26, CI 82–90, SL 1·55–1·63, SI 124–133, PW 1·37–1·40, MTL 1·45–1·53

(3 measured). Paratype females as workers, with the usual modifications in the structure of the alitrunk found in this caste.

Holotype worker, GHANA : Eastern Region, Mount Atewa, by pyrethrum knock-down, sample A5/7, 12.vii.1969 (*D. Leston*) (BMNH).

Paratypes. 3 workers, 2 ♀, same data as holotype, from pyrethrum knock-down samples A4/4 (♀), A5/5 (♀), A5/7, A6/6 and A6/7 (BMNH) (UG, Legon).

Nothing is known of the biology of *latharis* except that it appears to be totally arboreal and is confined to densely forested regions. The nearest relative of *latharis* within the group appears to be *limitis*, from which it is separated by the different development of the margination of the propodeum and other, more minor dissimilarities.

Polyrhachis lestoni **sp. n.**

(Text-figs 48, 61)

Holotype worker. TL 5·7, HL 1·34, HW 1·11, CI 83, SL 1·40, SI 126, PW 1·11, MTL 1·29. Mandibles with four teeth; anterior margin of clypeus with a projecting, shallow rectangular lobe, the corners of which are minutely dentate and acute. In the centre of the lobe is a small, U-shaped notch. Head broader behind than in front, the sides weakly convex and converging anteriorly. Eyes convex, situated well up on the sides, not breaking the outline of the sides in full-face view. Alitrunk strongly antero-posteriorly compressed, almost as broad as long. Pronotum convex dorsally, armed with a pair of short, broad spines and marginate almost to the promesonotal suture, which is distinct. Mesonotum and propodeum fused, without the metanotal groove, but the limits of the two segments are discernible dorsally due to the direction of the sculpturation, discussed below. The fused mesonotum-propodeum is strongly convex, not marginate. Propodeum unarmed but with a weak transverse ridge separating the dorsum from the declivity, the latter deep and shallowly concave. Scale of petiole large, armed only with a small pair of teeth laterally. In front view the margin of the scale between the teeth is strongly convex and weakly sinuate dorsally. Anterior face of the first gastral segment strongly concave medially.

Dorsum of head and gaster with a few erect, white hairs, absent from the dorsum of the alitrunk and the first gastral tergite. Everywhere a sparse, greyish pubescence present.

Clypeus superficially reticulate, overlaid by extremely fine longitudinal striae. Head longitudinally striate. Pronotum finely striate, much more finely so than the head or the remainder of the alitrunk, the striae overlying a superficial reticulation. Some pronotal striae tend to arch from the spines towards the centre of the sclerite and then outwards again towards the promesonotal junction; the rest are longitudinal. The more coarse striae of the mesonotal region are divergent posteriorly, whilst those of the propodeum converge on a postero-median spot situated close to the weak ridge separating the dorsum from the declivity. Declivity, petiole and gaster finely, superficially reticulate. Sides of pronotum and the pleurae finely reticulate-rugose but the sides of the propodeum sculptured as the dorsum.

Paratype workers as holotype, but in one specimen the dorsal margin of the petiole is somewhat concave medially, giving the appearance of a pair of very broad, blunt, dorsolaterally situated tubercles. The range of dimensions of the paratypes is: TL 5·5–5·7, HL 1·29–1·33, HW 1·11–1·14, CI 84–85, SL 1·37–1·40, SI 123–126, PW 1·12–1·14, MTL 1·26–1·29 (3 measured).

Holotype worker, GHANA : Eastern Region, Mt Atewa, primary forest, by pyrethrum knock-down, sample A5/1, 12.vii.1969 (*D. Leston*) (BMNH).

Paratypes. One worker with same data as holotype (BMNH); one worker with same data but sample A4/4 (UG, Legon); and one worker, GHANA : Eastern Region, Adeiso (*P. M. Room*) (in coll. P. M. Room).

Polyrhachis limitis Santschi **stat. n.**

(Text-fig. 36)

Polyrhachis alexisi st. *limitis* Santschi, 1939 : 12. Holotype worker, CONGO (KINSHASA) : Congo Pale (*Gérard*) (NM, Basle) [examined].

Worker. TL 6·5, HL 1·59, HW 1·29, CI 81, SL 1·63, SI 126, PW 1·33, MTL 1·67.

Anterior clypeal margin produced into a shallow, rectangular lobe medially, the lobe bluntly dentate on each side. Sides of head more or less straight and somewhat convergent in front of the eyes, convex and rounding into the occipital margin behind. Eyes convex, situated well up on the sides but breaking the outline of the sides in full-face view. Alitrunk anteroposteriorly compressed and with a swollen appearance. Pronotum convex, armed with a pair of spines, marginate from the spines to a point about half way between their bases and the promesonotal suture; the latter distinct. Mesonotum not marginate, the dorsum rounding into the sides, separated from the propodeum by a very weakly marked metanotal groove. Propodeum unarmed, weakly marginate laterally and posteriorly, the sides not greatly expanded beyond the lateral marginations in dorsal view. Propodeal declivity deep and shallowly concave. Petiole armed with four spines, the dorsal pair noticeably longer than the laterals but narrower and separated by a distance about twice as great as the length of one spine. Anterior face of the first gastral segment concave medially.

Erect hairs absent from all dorsal surfaces of the head and body except the clypeus and the apex of the gaster. Pubescence very short and sparse, most easily seen on the gaster and the appendages.

Clypeus, declivity of propodeum, petiole and gaster finely reticulate. Dorsal surfaces of head, mesonotum and propodeum longitudinally striate-rugose, the pronotum more irregularly so, tending to a rugoreticulum laterally. Sides of pronotum and the mesopleuron reticulate-rugose, the sides of the propodeum longitudinally striate-rugose.

The species is apparently known only from the type collection. Originally described as a race of *alexisi*, *limitis* is now considered to be a good species and appears to be more closely related to *latharis* than to the species with which it was first associated. The main differences responsible for the decision to raise *limitis* to specific rank were the presence of margination on the propodeum and the differences in sculpturation between it and *alexisi*. In the original description Santschi begins with the symbol for female but later refers to the specimen as a worker, which is the correct caste.

THE *GAMAII*-GROUP

The single species constituting this group is not obviously related to any other species known from the Ethiopian region. It is characterised by the partial margination of the alitrunk, the reticulate-punctate sculpturation and the lack of erect hairs. Besides these characters, the pronotum has only a pair of blunt tubercles, the propodeum has a pair of bluntly tuberculiform teeth, and the mesoscutellum is present upon the dorsum of the alitrunk. The petiole is more or less normal, with a pair of dorsal spines and a lateral pair of teeth.

As Arnold (1924 : 137) pointed out, this species is difficult to place. In the form of the petiole it resembles some members of the *militaris*-group, but in virtually all other ways it is unrelated to that group.

Polyrhachis gamaii Santschi

Polyrhachis gamaii Santschi, 1917 : 295. Holotype ♀, South Africa : Natal, Durban (*H. B. Marley*) (probably in NM, Basle).

Polyrhachis gamaii Santschi; Arnold, 1947 : 136, figs 5a, 5b, worker [examined].

Worker. TL 7·7–8·5, HL 1·81–1·97, HW 1·70–2·08, CI 94–105, SL 1·81–2·08, SI 100–106, PW 1·18–1·48, MTL 2·37–2·59. (6 measured.)

Head truncated in front so that the clypeus is almost vertical, its anterior margin entire. Sides of head convex, the convex eyes situated well up from the ventrolateral margin, not breaking the outline of the sides of the head in full-face view. Pronotum and mesonotum not marginate, the dorsal surfaces rounding into the sides; propodeum marginate laterally. Humeral angles of the pronotum without spines but projecting as bluntly rounded tubercles. Propodeum with a pair of thick, tuberculiform teeth, directed upwards and weakly outwards. Promesonotal suture distinct; the mesoscutellum present on the dorsum, separated from the scutum in front and the propodeum behind by a pair of weakly raised, transverse carinae, best seen in profile. Petiole armed with a dorsal pair of long straight spines whose apices curve slightly inwards in front view, and with a laterally placed pair of acute teeth. The subpetiolar process is developed anteriorly into a dentiform lobe.

Erect hairs present only on the mandibles, clypeus and the apex of the gaster. A fine, sparse pubescence is present on the antennal scapes, the legs, and the first gastral segment in some individuals.

Sculpturation of head varying above the eyes from finely reticulate-punctate to superficially reticulate. The alitrunk dorsally finely reticulate to reticulate-punctate; the sides and the petiole more coarsely so. Declivity of propodeum and gaster very faintly and finely, superficially reticulate. Colouration a variable mixture of black, black-brown, red, and red-brown. Head black with red-brown mandibles, the antennal scapes red-brown or black. Alitrunk varying from red-brown with large infuscated areas to mostly black with weak red-brown or black-brown patches. The sides of the alitrunk usually red-brown but variously infuscated. Petiole and gaster varying from red-brown to black-brown; legs usually red-brown. In general the larger individuals tend to have more black and less red on the alitrunk than do the smaller forms.

In his description of the worker Arnold stated that it was without doubt the worker of *gamaii*, a species previously known only from the queen caste. A comparison of these workers with a female in the BMNH collection suggests that Arnold was correct in assigning them to *gamaii*. In general body form and sculpturation the differences between the female and the workers are only as expected between the two castes, but the female is distinctly more pilose and has the petiolar spines disproportionally spaced in comparison to the worker. Marked similarities include the head shape, development of pronotal tubercles and propodeal teeth, form of petiole, and the presence of a dentiform subpetiolar process.

Nothing is known of the biology of this species, but a lone female without wings was found in South Africa in March.

Material examined.

South Africa : Zululand, St Lucia (J. W. G. – in Arnold coll.).

SPECIES EXCLUDED

Polyrhachis bihamata (Drury)

Formica bihamata Drury, 1773 : 73, pl. 38, fig. 7, 8.
Polyrhachis bihamata (Drury) F. Smith, 1857 : 58, fig. 19.

Drury gave the type-locality of this species as the Island of Johanna, near Madagascar. André (1886 : 286) in his key to the then-known species of *Polyrhachis* of the Ethiopian region stated that 'This species, which lives in tropical Asia, Malaysia and the Australian islands has been indicated by Drury as being found on Johanna Island, one of the Comoros, but I doubt this locality.'

Wheeler (1922*a* : 257) pointed out that the genus *Polyrhachis* is absent from Madagascar, and Hung (1970 : 16) excluded the species from the regional fauna, adding that Drury was 'evidently in error'.

Polyrhachis consimilis F. Smith

Polyrhachis consimilis F. Smith, 1858 : 73, pl. 4, figs 30, 31. Holotype worker (BMNH) [examined].

Smith recorded the type-locality of this species as Sierra Leone and noted that it resembled *P. ammon* (F.). Emery (1925 : 185) placed *consimilis* in the subgenus *Hagiomyrma* Wheeler, of which *ammon* is the type-species but noted that the species was dubiously placed in this subgenus and that the type-locality was probably incorrect. The known distribution of the *ammon* species group is the Indo-Australian region, and as no further specimens of this species or of this species-group have been collected in Africa it is now probably safe to assume that Smith was in error when he assigned *consimilis* to Sierra Leone.

Polyrhachis setulosus 'Smith'

Polyrhachis setulosus Smith; Radoszkovsky, 1881 : 197.

Radoszkovsky recorded this species from Angola and credited the name to Smith. Wheeler (1922*b* : 992, footnote) noted that he could not find a description of this species. A search through the literature, particularly of F. Smith, by the present author has also failed to reveal any description of *setulosus*, which is thus assumed to be a *nomen nudum*.

Phasmomyrmex paradoxa (E. André)

Polyrhachis paradoxa E. André, 1892 : 46. Holotype worker, GABON.
Phasmomyrmex paradoxa (E. André) Emery, 1925 : 58.
Camponotus polyrhachioides Emery, 1897 : 227, fig. 11a, worker.

Ph. paradoxa is superficially similar to the 'normal' *Polyrhachis* species of the Ethiopian region as the pronotum is armed with a pair of broad, flattened teeth, the pronotum and mesonotum are bluntly marginate and the petiole bears a pair of short but acute spines. However, the mesoscutellum is present on the dorsum of the alitrunk and is fused to the propodeum; separating them from the mesoscutum is a broad, deep impression. The propodeum in profile is blocky, unarmed and strongly sloping backwards, the declivity is strongly concave. In dorsal view the pronotum is more than twice as wide as the propodeum, and the fine reticulate-punctate sculpturation of the former contrasts strongly to the sparse, coarse rugulation of the latter segment.

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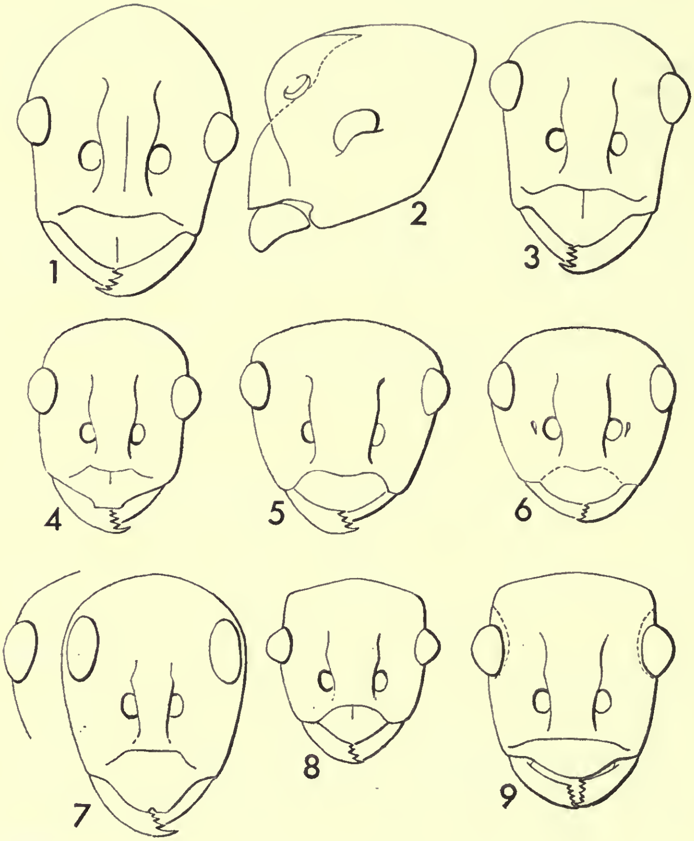
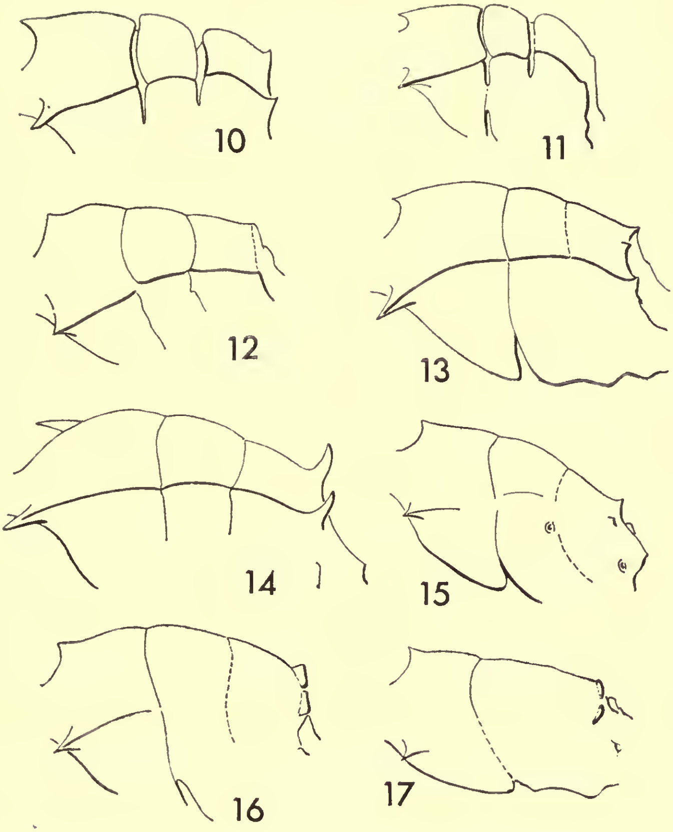
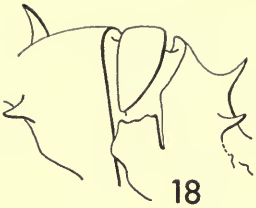
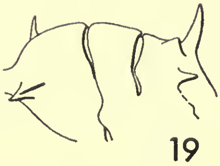


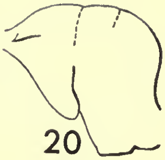
Text-figs 1–9. Head shape in *Polyrhachis* workers, antennae omitted. 1 *concava*, 2 the same in profile to show the ventral masking of the eye at its greatest extent. 3 *alluaudi*, 4 *volkarti*, 5 *fissa*, 6 *lauta*, 7 *viscosa*, offset shows eye at maximum convexity. 8 *phidias*, 9 *cornuta*.

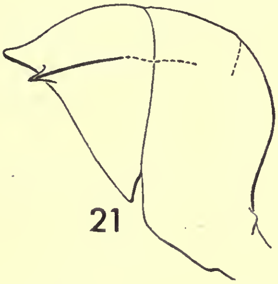


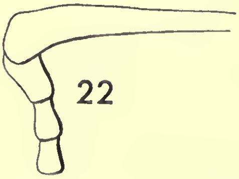
Text-figs 10–17. Alitrunks of *Polyrhachis* workers. 10 *alluaudi*, 11 *rufipalpis*, 12 *durbanensis*, 13 *viscosa*, 14 *nigrita*, 15 *aenescens*, 16 *otleti*, 17 *volkarti*.

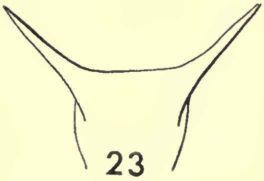


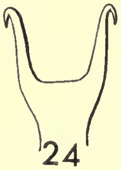


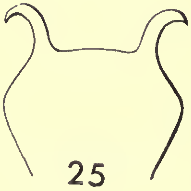












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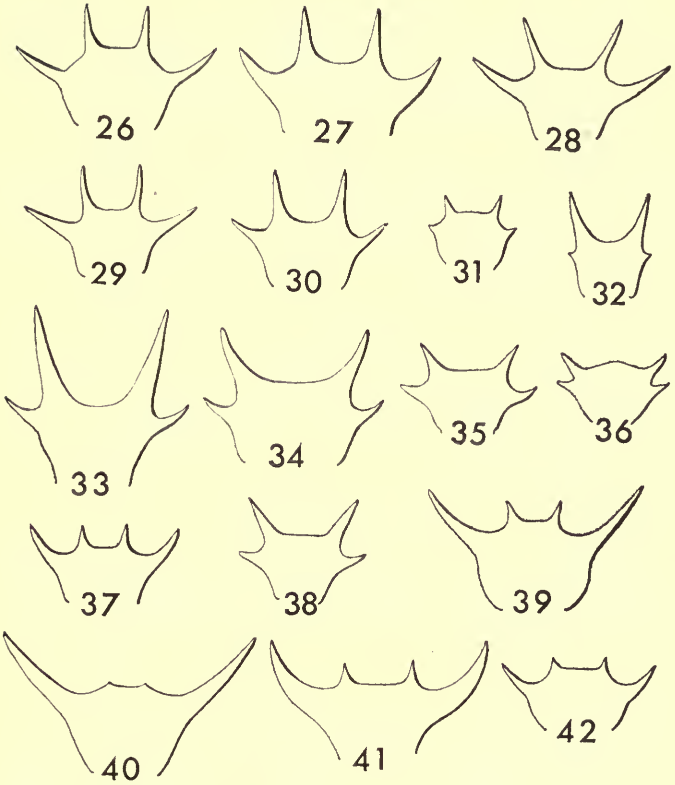
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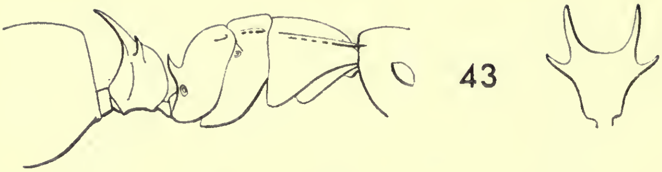

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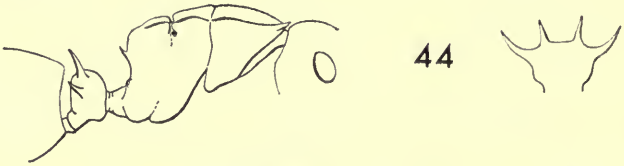

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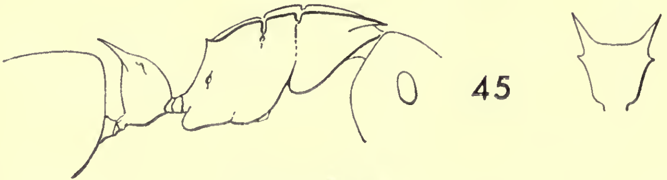

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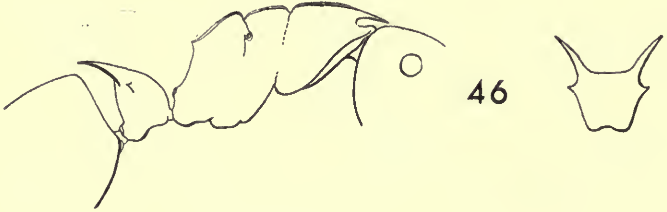

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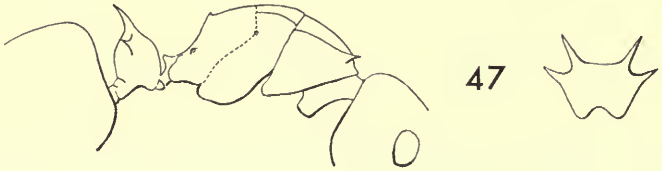

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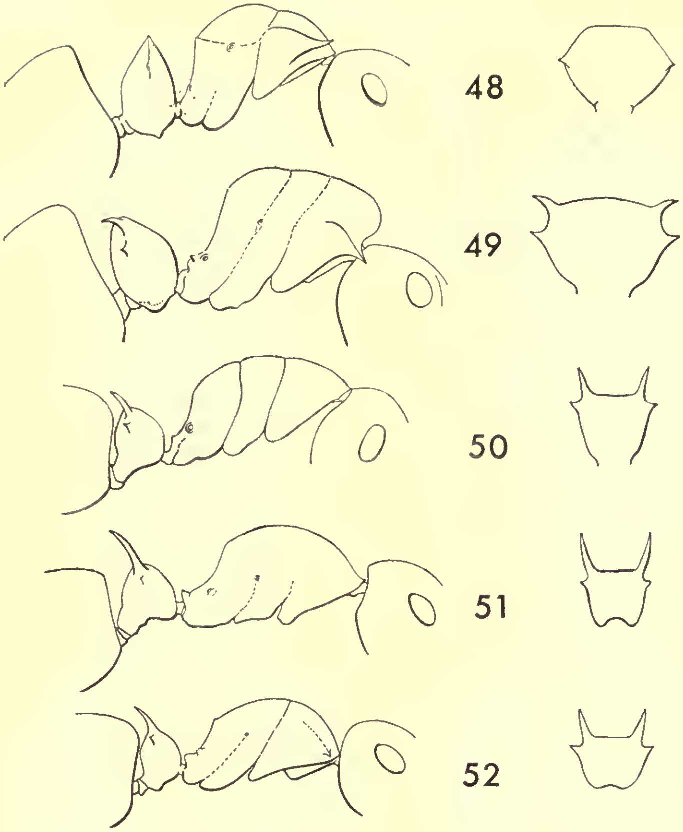

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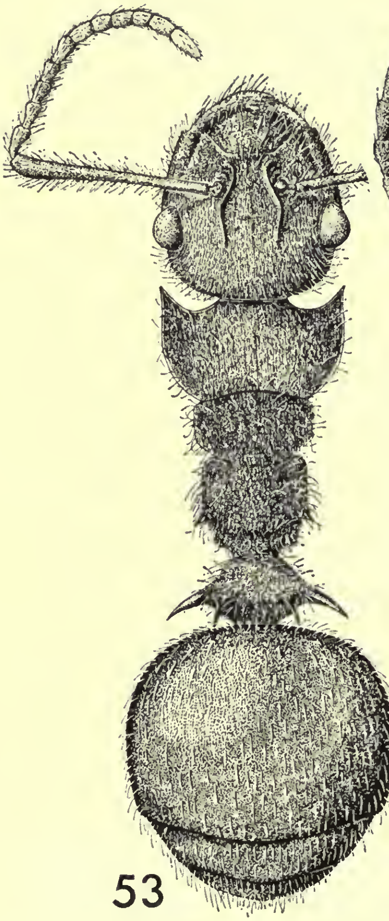
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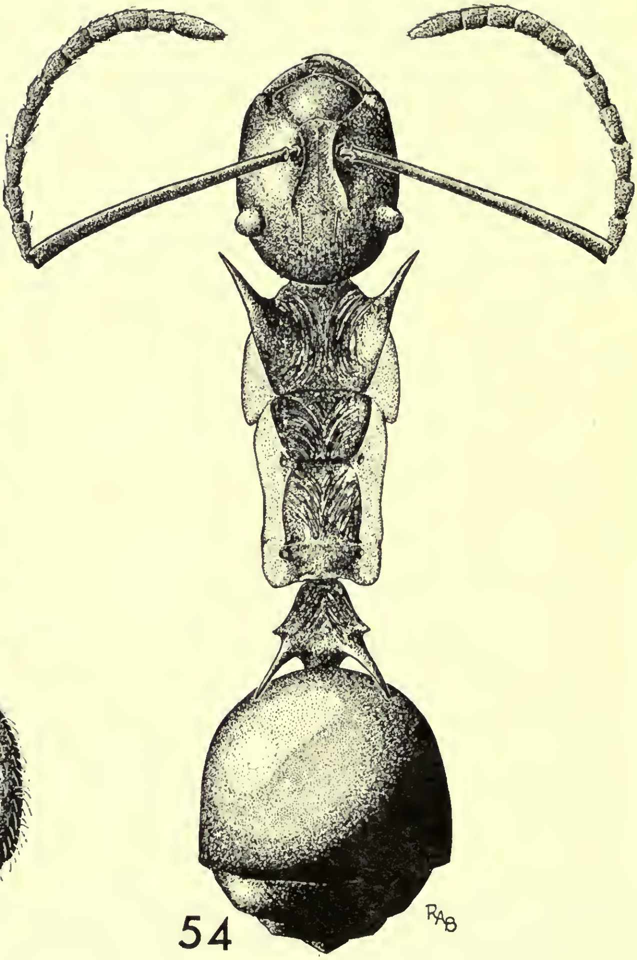
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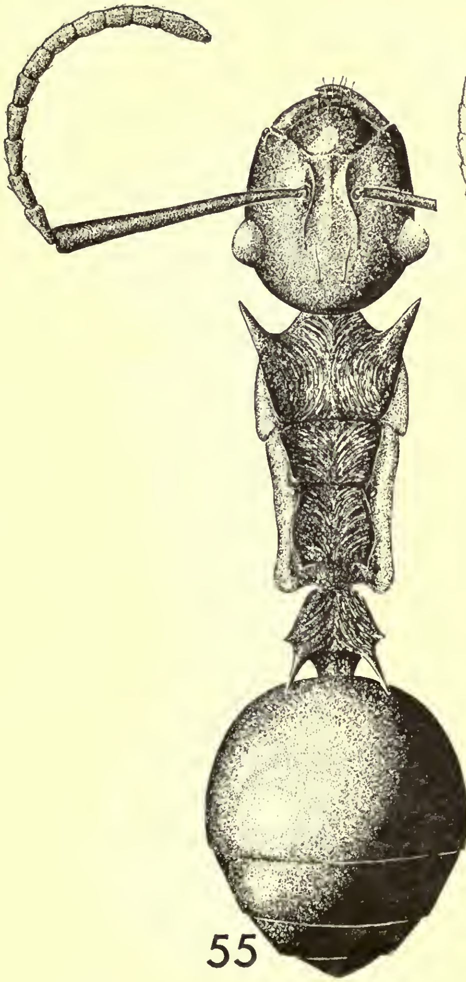
TEXT-FIG. 53. *Polyrhachis asomaningi* sp. n., dorsal view of holotype worker, legs omitted.

TEXT-FIG. 54. *Polyrhachis decellei* sp. n., dorsal view of holotype worker, legs omitted.



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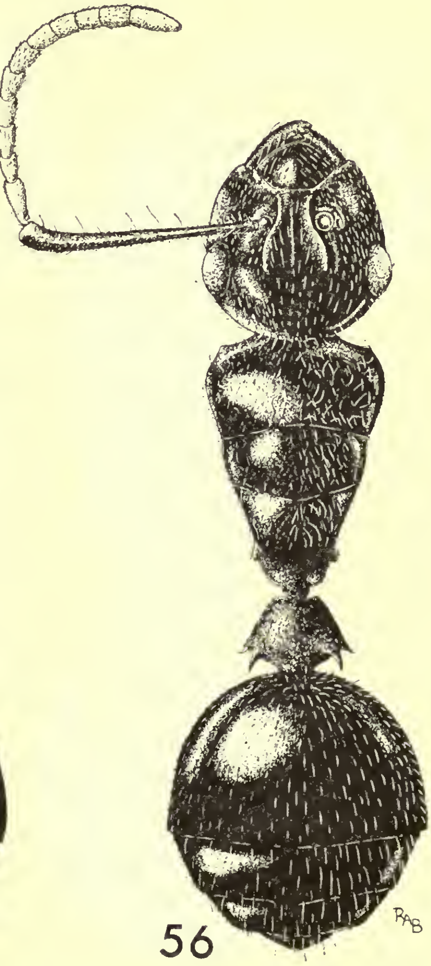

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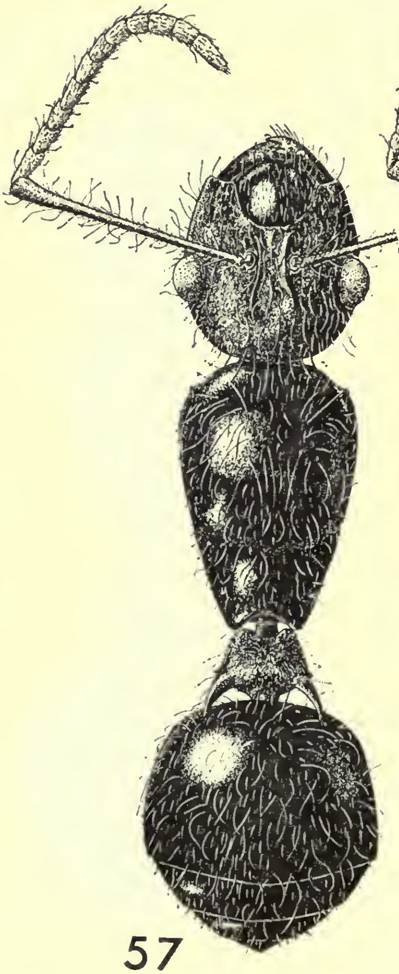
Text-fig. 55. *Polyrhachis esarata* sp. n., dorsal view of holotype worker, legs omitted.

Text-fig. 56. *Polyrhachis braxa* sp. n., dorsal view of holotype worker, legs and right antenna omitted.



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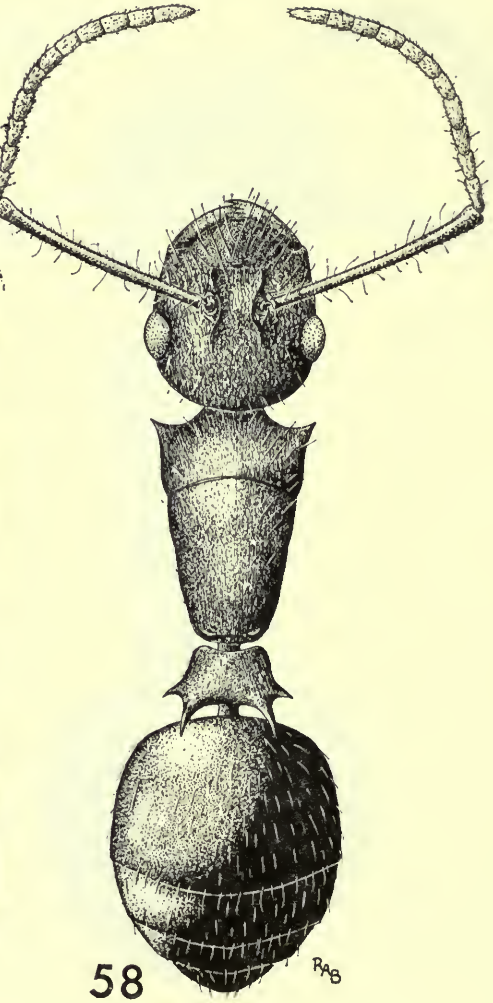

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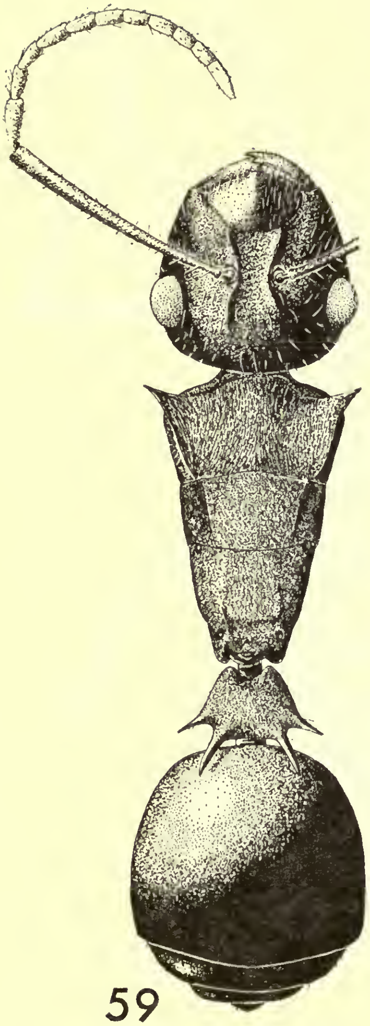
Text-fig. 57. *Polyrhachis khepra* sp. n., dorsal view of holotype worker, legs omitted.

Text-fig. 58. *Polyrhachis regesa* sp. n., dorsal view of holotype worker, legs omitted.



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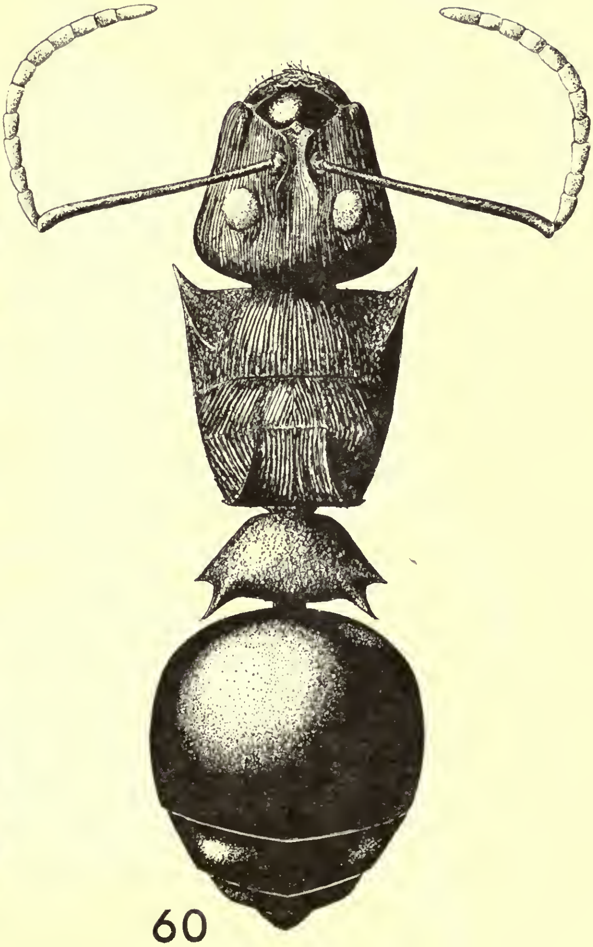

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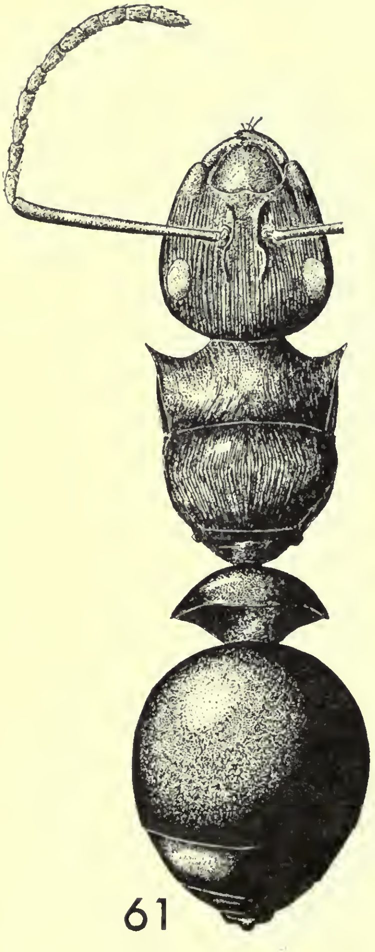
Text-fig. 59. *Polyrhachis transiens* sp. n., dorsal view of holotype worker, legs omitted.

Text-fig. 60. *Polyrhachis latharis* sp. n., dorsal view of holotype worker, legs omitted.



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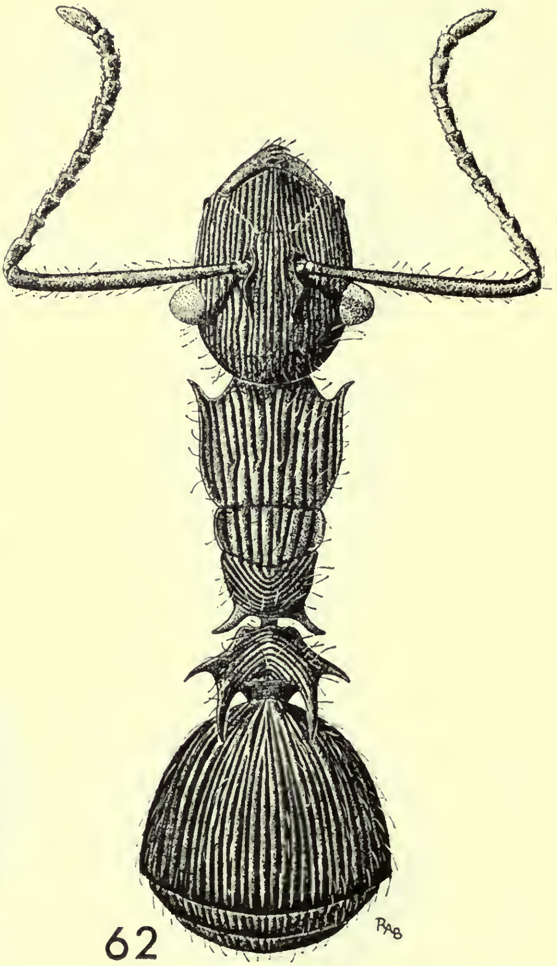

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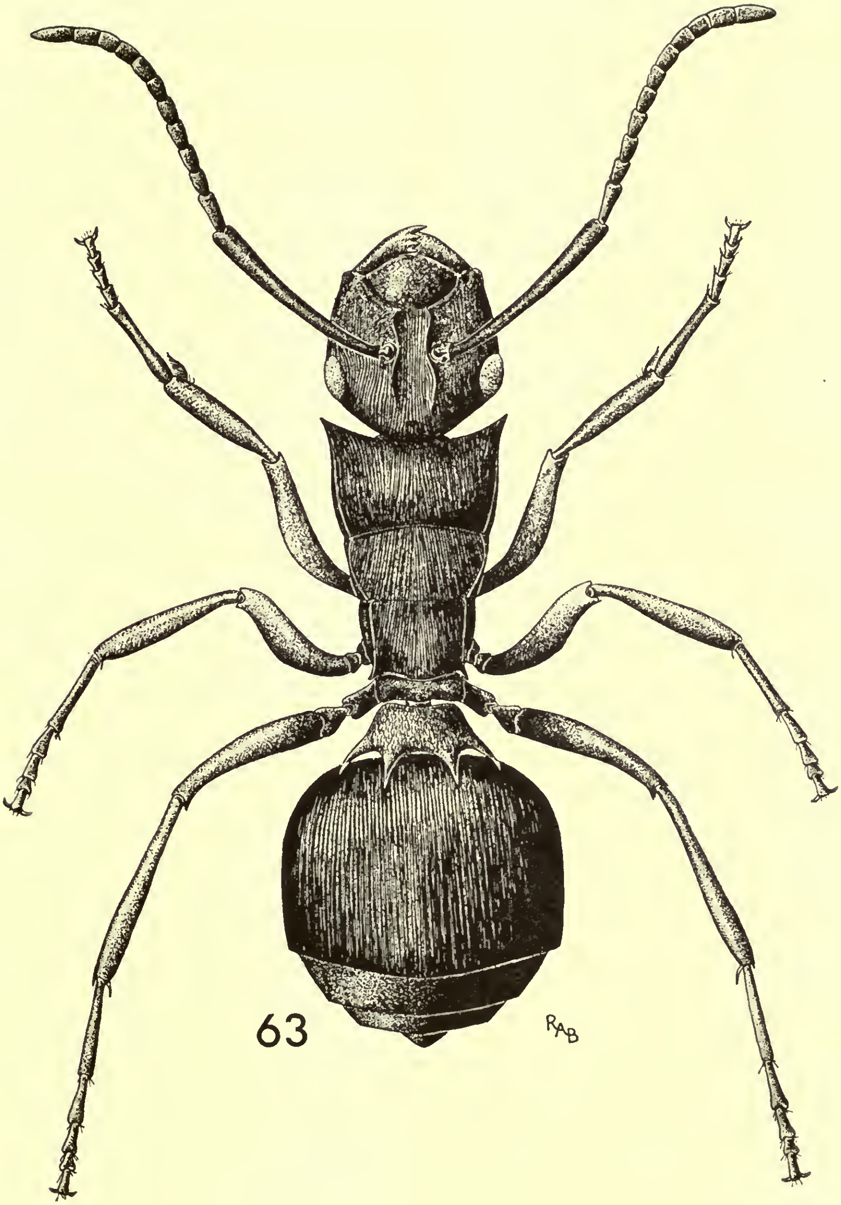
Text-fig. 61. *Polyrhachis lestoni* sp. n., dorsal view of holotype worker, legs omitted.

Text-fig. 62. *Polyrhachis sulcata*, dorsal view of worker, legs omitted.



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THE HIGHER CLASSIFICATION OF THE LYCAENIDAE (LEPIDOPTERA): A TENTATIVE ARRANGEMENT

J. N. ELIOT

BULLETIN OF
THE BRITISH MUSEUM (NATURAL HISTORY)
ENTOMOLOGY Vol. 28 No. 6
LONDON : 1973

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BY

JOHN NEVILL ELIOT

Upcott House, Bishop's Hull, Taunton, Somerset

Pp. 371–505 ; 6 *Plates* ; 162 *Text-figures*

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THE BRITISH MUSEUM (NATURAL HISTORY)
ENTOMOLOGY Vol. 28 No. 6
LONDON 1973

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THE HIGHER CLASSIFICATION OF THE LYCAENIDAE (LEPIDOPTERA): A TENTATIVE ARRANGEMENT

By J. N. ELIOT

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SYNOPSIS

A tentative reclassification is proposed for the Lycaenidae on the basis of the male genitalia, characters of the head, legs and wings, secondary sexual characters and an imperfect knowledge of the early stages. Keys are given to the subfamilies, tribes and sections. All the nominal genera are listed under their respective subfamilies, tribes and sections. Eight new tribes and seven new genera are described; one new generic name is proposed to replace a junior homonym. An attempt is made to reconstruct the phylogeny and zoogeographical history of the family.

INTRODUCTION

FOR many years, intermittently and in my spare time, I have been investigating the Oriental Lycaenidae in the hope that ultimately I might prepare keys to all the Oriental species, somewhat on the lines of Evans's well-known keys to the Hesperiidae of the World, and in the belief that such a work would be useful to the growing number of collectors in South-East Asia. In order to provide a framework and logical sequence for such keys I deemed it necessary to start by working out a higher classification; but although the Oriental Lycaenid fauna exceeds that of other regions in richness and variety, it proved impossible to do this in isolation and I found myself drawn into a study of Lycaenidae from other regions. My interest becoming increasingly aroused, I decided to extend my examination in outline to the whole world, though it was only after considerable misgivings that I decided to include the Neotropical genera and the wholly African subfamily Lipteninae. I had no personal experience of either group in the field and therefore lacked the confidence imparted by the feeling of 'knowing one's butterflies'. However Riley (1956) had already pointed out that the Neotropical 'Theclas', despite their numbers and varied appearance, were remarkably homogeneous in male genitalia and venation, whilst in the case of Lipteninae it was clear that the groundwork had already been completed by Stempffer during almost a lifetime of meticulous research, supplemented by the work of such experts as Bennett, Clench, Jackson and Roche. I therefore decided to carry out a limited examination of these groups, confined to the type-species or, in the case of polytypic genera, to representative species of the apparent species-groups. It might well be thought imprudent to base a classification on such limited evidence, especially if differing much from that proposed by Stempffer. However, I felt encouraged to persist for two reasons. Firstly, Clench (1965) had proposed an alternative classification for the Ethiopian Region differing quite substantially from Stempffer's, and it seemed to me that when experts disagreed it was open, and perhaps even valuable, for a layman to act as umpire or to venture a third opinion. In the second place Stempffer had himself expressed the wish that his ideas should attract fruitful criticism; and I can only hope that my ideas are not wholly destructive. In the event my classification approximates more closely to that of Clench than to that of Stempffer, but this does not in any way detract from my admiration for the latter's outstanding contribution to our knowledge of the African Lycaenidae.

ACKNOWLEDGEMENTS

I wish first to thank the Trustees of the British Museum (Natural History) for permission to make use of the collections and library, and the many members of the Museum staff who helped me in one way or another. Whilst the work was in progress the Lycaenidae were housed at Tring, and I must therefore single out for especial gratitude Messrs G. E. Tite and N. H. Bennett and Miss S. J. May, past or present members of the Tring staff, for much patient assistance given ungrudgingly. I am also greatly indebted to Mr R. I. Vane-Wright, in charge of the butterfly collections, for encouragement and for his painstaking examination of Lycaenid scales under the scanning electron microscope. The following gentlemen kindly read the whole or part of my paper in draft, and many of their criticisms and suggestions are incorporated in the final text: Lt.-Col. C. F. Cowan, Messrs N. D. Riley, R. I. Vane-Wright, G. E. Tite, N. H. Bennett, J. D. Holloway, H. Stempffer and H. K. Clench. It was a particular pleasure to receive comments from the two last-named gentlemen, since their own very extensive work on the Lycaenidae has, to a considerable extent, provided the foundations on which my work is based. I wish to thank Dr A. Sibatani, of Lindfield, N.S.W., for a most helpful discussion on the systematics of the Australian genera and for information on their early stages. Mr D. Sands also kindly provided me with information on the early stages

of Australian species, and Mr L. E. Couchman gave me his views on the interrelationships of the Australian genera. Dr A. Kapur, Director of the Zoological Survey of India, kindly arranged for the dissection of the unique holotype of *Listeria dudgeoni* de Nicéville and sent me drawings of its head and genitalia. Major A. Bedford Russell put his collection of Neotropical Lycaenidae at my disposal. Finally I must express my debt to the many previous workers in this field, on whose discoveries I have drawn. If I have not always given them their full due, this is unintentional; the butterfly literature is so vast that it is inevitable that I have overlooked much important work.

GENERAL AND HISTORICAL DISCUSSION

So far no author has produced a satisfactory classification of the whole of the Lycaenidae, although a notable step in this direction was taken by Clench (1955, amended 1965). Other important works in a more limited field are by Toxopeus (1929), who erected a number of new subfamilies, tribes and genera, but without a diagnosis of their characters which was to follow in a later, but unfortunately never published, paper; by Evans (1932, amended by Cantlie, 1963), whose keys to the Indo-Burmese genera, based on easily seen external characters, include some artificial groupings; by Riley (1956), who investigated the male genitalia of the tribes and genera of the Holarctic Theclinae; by Shirôzu & Yamamoto (1956), whose revision of the tribe Theclini, using a variety of characters, is a model of careful analysis; and finally by Stempffer (1957, 1967), who in a monumental work on the genera of the African Lycaenidae sets out a tentative higher classification for the Ethiopian Region based primarily on the male genitalia.

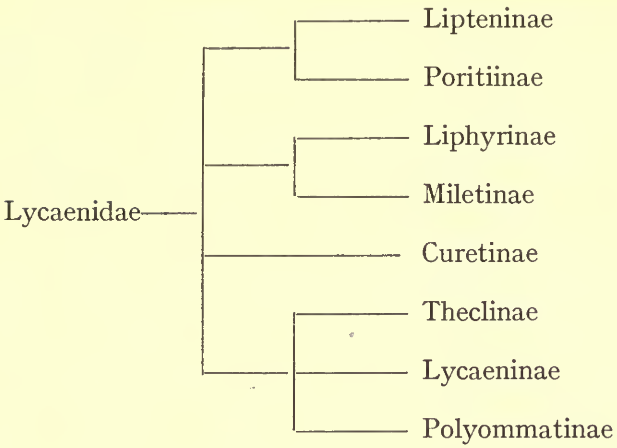
In the above works the categories family, subfamily and tribe carry different weight. Indeed the first difficulty which faces any would-be systematist is the fact that no standard criteria have been laid down by which he may decide the limits of each sub-division. Some twenty years ago the family Lycaenidae was generally accepted as a group of approximately equal status with the Riodinidae[1] within the superfamily Lycaenoidea. However, Clench (1955) divided the former into three families co-equal with the Riodinidae, namely Lycaenidae (sensu stricto), Liptenidae and Liphyridae. Shirôzu & Yamamoto (1957) added a further family Curetidae. On the other hand Ehrlich (1958, 1960), on the basis of many, mainly internal characters, proposed the reduction of the Lycaenoidea to the status of a single family with three subfamilies: Riodininae, Styginae (for the single species, *Styx infernalis* Staudinger) and Lycaeninae, the last-named including Lycaenidae (sensu Clench), Liptenidae, Liphyridae and Curetidae. I reject so drastic a downgrading as that proposed by Ehrlich, and recognize that there are advantages in upgrading numerically large groups into families, as proposed by Clench, since this facilitates their further subdivision using only the generally accepted categories of subfamily, tribe, genus and subgenus. At the same time I recognize that Ehrlich was correct in his view that the four ‘families’ Lycaenidae (sensu Clench), Liptenidae, Liphyridae and Curetidae all have more characters in common with one another than with Riodinidae or Stygidae, particularly in respect of the widely used family characters of antenna and male foreleg. For this reason I prefer to treat the first four as the single family Lycaenidae, thus restoring to this name its former meaning, even though I very tentatively suggest later (pp. 460–461) that this taxonomic arrangement may conceivably reflect a false phylogenetic history.

---

[1] The family-group name Riodinidae is used advisedly, pending the outcome of an application by Cowan to the *International Commission on Zoological Nomenclature* for its retention in preference to at least five earlier available family-group names.

I consider that the category subfamily should be restricted to the major branches of the family tree. Unfortunately this leaves only the categories tribe, genus, subgenus and species for the various minor branches, branchlets, twigs and twiglets, unless one multiplies the subgeneric categories, as for example was done by Munroe (1960) in his classification of the Papilionidae, by introducing sections, subsections, series and species-groups between the subgenus and the species. Such multiplication of minor categories is, I think, rather confusing and I prefer the concept of supertribes and subtribes and, whilst accepting the subgenus as a valid taxonomic concept, deplore its use in practice because of the lengthening of nomenclature involved. Unfortunately the *International Code of Zoological Nomenclature* does not recognize a separate suffix to distinguish supertribes and subtribes from tribes, and these terms are therefore best avoided. For this reason I equate supertribes with subfamilies and designate subtribes as sections under the name of an included genus, e.g. the *Dapidodigma* section of Cheritrini.

On this basis I recognize Curetidae (sensu Shirôzu & Yamamoto) and Liptenidae (sensu Clench) as valid subfamilies, except that I remove the genus *Thestor* from the latter. Clench divided his family Liphyridae into three subfamilies: Liphyrinae, Gerydinae (which Corbet (1939) had previously replaced by Miletinae) and Poritiinae, but the last-named was only included with some reservation. The rather isolated position of Poritiinae was recognized by Toxopeus (op. cit.), who removed them to Riodinidae, where they occupy a still more anomalous position. Both in their immature and adult stages, as I shall show later, their affinities lie with Lipteninae, the distinction being of supertribal order. I treat them for convenience as a subfamily; if they were to be merged with Lipteninae the name Poritiinae would take priority under the *Code*. I agree with Clench that Liphyrinae and Miletinae are fairly closely related, the distinction being of supertribal order. I retain both as subfamilies; if they should be merged the name Miletinae would take priority. Clench subdivided his family Lycaenidae (sensu stricto) into a number of groups based chiefly on characters of the legs and the presence or absence of a juxta in the male genitalia. This restricted approach led him into many wrong conclusions, a fact which he recognized as highly probable at the time. I regard the whole assemblage, comprising perhaps 90 per cent. of the family (sensu lato) as of subfamily status. Unfortunately it has been subdivided in the past eighty years into numerous so-called subfamilies, including many of an artificial character. The best natural grouping, of supertribal order, is the traditional popular trinity o- ‘Blues’, ‘Coppers’ and ‘Hairstreaks’, and I accept these as the subfamilies Polyomf matinae, Lycaeninae and Theclinae respectively. The above ideas can be expressed by the following simple diagram:—



PRINCIPLES OF CLASSIFICATION

In deciding on my classification I have been guided by the principles discussed below.

1. As many characters as possible should be used.

This principle is generally accepted, but a different view has been expressed by Warren (1947), who attempted a classification of the butterflies based on what he called true and complementary characters. Stempffer (1967) has already pointed out that Warren's characterization of the Lycaenidae needs considerable qualification, and when it is examined on a world-wide basis it is found that the true and complementary characters which Warren uses to key out the Lycaenidae are, by his own definition, false characters (i.e., characters which have neither a recognizable frequency of occurrence nor stability of combination and can often be found among members of other units). The conclusion seems obvious. At least at family and lower level it is the combination of many characters that defines the natural groupings. The more characters that are used the more complete will be our picture of each group and the less likely are errors to occur. This is not to suggest that all characters should be treated as of equal importance; some are clearly subject to greater variability than others. The important thing is to recognize that each character has some value, and that its value will differ in different groups.

2. Groups having several characters in common are more likely to be closely related than groups with fewer characters in common.

This principle has been severely criticized by Jordan (1898) in a very important paper on the antennae of butterflies, on the grounds that: 'that evidence is taken as the more weighty, i.e. as qualitatively the better, which is numerically, i.e. quantitatively, the higher'. He goes on to say: 'A satisfactory insight into the true connection between the members of any group of animals will not be gained unless the classifier takes as his aim to ascertain, so far as that is possible from the necessarily incomplete knowledge of the organs, the probable phyletic development of each single distinguishing character, so that we get a picture of the gradual modification of the various organs from the ancestral stage of development into those stages of mutation which we now observe in the different members of the group to be classified'. This ideal approach led Jordan, on the basis of the antennae, to propose most convincingly a diphyletic arrangement of the butterflies, one branch giving rise to the Papilionidae and Nymphalidae (sensu lato) and the other to the Lycaenidae, Riodinidae and Pieridae, with the Hesperiidae associated in an indeterminate way with the Lycaenid branch. However, few, if any, entomologists would accept this arrangement to-day.

A major difficulty in working out a phylogeny is uncertainty as to what was the primitive state of any particular character, and the question may be further complicated by ignorance as to what specializations may have been acquired in the past and then secondarily lost. Moreover it is clear that it is quite usual for butterflies which possess some undoubtedly primitive characters to possess also some undoubtedly advanced characters (see p. 411 concerning *Liphyra*). Further, the ideal phyletic method cannot take proper account of convergence, due presumably to common ecological factors, and still less of haphazard coincidence, which I suspect may be of quite frequent occurrence in nature. I conclude that any attempt to work out a phylogeny on the basis of many characters considered individually would inevitably result in several conflicting solutions, so that in the end one would be forced to adopt a compromise unlikely to be any sounder than a quantitative solution in which intuition had also played a part.

3. As far as possible uniform criteria should be used.

This principle needs no justification, but in practice is so beset by difficulties that it merits some discussion. Numerous examples could be quoted of a character which shows constancy in one group and variability in another group of apparently equal taxonomic value. A single example will suffice. Within Theclinae the group of tribes which includes the African and Oriental Deudorigini, the predominantly Neotropical and Holarctic Eumaeini (better known as Strymonini) and the Palaearctic Tomarini occurs in every region in a bewildering variety of external form. It seems that the origin of this group of tribes must be ancient, yet the male genitalia are extraordinarily similar throughout the complex (Riley, 1956, refers to them as 'greyhound-shaped'). Judged by this one character alone they might all be lumped into very few genera. In addition, venation shows unusual constancy within each tribe. On the other hand the African and Oriental tribes Iolaini and Cheritrini have a more restricted distribution suggestive of a later origin, yet exhibit very great diversity of pattern in male genitalia and venation even in externally similar forms. Marked variation in both features may extend to the subspecific level in Iolaini, whilst in *Drupadia* (Cheritrini) the number of fore wing veins varies individually. Clearly extreme variability in male genitalia and venation is as much a character of Iolaini and Cheritrini as extreme constancy in these features is a character of the Deudorigini group of tribes. Possibly Iolaini and Cheritrini are undergoing, or have recently undergone, explosive evolution, though in the case of the latter tribe, which includes a number of very small genera, an alternative explanation, suggested to me by Cowan, is that they are relicts of a once much larger assemblage.

Despite the difficulties referred to above, I think Stempffer paid insufficient attention to the principle of uniform criteria. For example, he accepts a subdivision of what I regard as the tribe Polyommatini into numerous subfamilies on the grounds of differences in the male genitalia which, to me at least, seem trivial but he does not accord similar treatment to Theclinae in which equally great differences occur. Still stranger is his inconsistency in using the partial asymmetry of the male genitalia (confined to the uncus) in *Mimacraea* and *Mimeresia* apparently as the main justification for erecting a distinct subfamily to contain these two genera, although he does not subdivide the tribe Pentilini on the basis of the complete asymmetry which occurs in some genera. Asymmetry is a specialized condition which I think is of limited importance at the higher levels of classification, and I think Stempffer was correct in treating complete asymmetry in Pentilini as of no more than generic significance. It follows that I attach still less importance to partial asymmetry, which seems to be fairly widespread among the butterflies; I have noted well-marked examples in Lycaenidae occurring in the brachia in Horagini, in the juxta in the *'Holochila' margarita* Semper species-group (Candaladini) and in the valvae in the *Philiris diana* Waterhouse & Lyell species-group (Luciini).

4. It is unwise to accord absolute primacy to any one character.

Stempffer (1967 : 278), who uses the male genitalia as his primary character, writes: 'I believe it is essential, in order to achieve a coherent system, to establish a kind of hierarchy—arbitrary perhaps—amongst characters, and to follow this throughout a family, only using characters of secondary importance in a supplementary sense'. Yet one does not need to look beyond the pages of Stempffer's own work to see what well-marked differences in the male genitalia may result from the geographic separation of closely related genera. For example the Oriental genus *Petrelaea* (Text-fig. 78; also Stempffer, 1967; fig. 198) and the African genus *Pseudonacaduba* (Text-fig. 76; also Stempffer, figs 196, 197) are so close on external characters that some authors combine them into a single genus; yet they show considerable differences in the male genitalia, the former having relatively small dorsal structures and large free valvae whilst the latter has heavy dorsal structures and relatively very small valvae which are ventrally conjoined to their mid-point. The one decisive similarity which proclaims their relationship lies in an unusual feature in the penis, namely that the ductus enters on the ventral side (it should be noted that Stempffer's fig. 198, like some of his other figures, shows the penis upside down). Equally striking differences are shown in the related genera *Neozephyrus* and *Austrozephyrus* (see Howarth, 1956), the former having the uncus reduced to two well-separated lobes and the brachia prominent, the latter having a strongly developed, spiked uncus combined with complete absence of the brachia. On grounds of male genitalia alone they might go into separate tribes and one must turn to their external characters, which establish beyond reasonable doubt their common ancestry.

5. The possibility that similarities may be due to convergence or coincidence must always be considered.

There is a limit to the number of distinct patterns which can be adopted by any organ. Similarities are, therefore, bound to occur from time to time. These may be pure coincidences, or examples of convergence due to some common external factor, or genuine indications of common ancestry. The more uncommon or abnormal such similarities are, the more likely they are to be due to common ancestry. For example, it seems necessary to associate together in the small Thecline tribe Amblypodiini the rather dissimilar-looking genera *Iraota* (Oriental) and *Myrina* (African) because of an uncommon feature of venation (veins 5 and 6 arising together from the apex of the fore wing cell), as well as a dominant tail at vein 1b and a similar development of hair scales on the hind wing, and common larval food plant (*Ficus* spp.), despite a different type of pupa (girdled in *Iraota*, attached by cremaster only in *Myrina*). But even the most uncommon similarities may be coincidental, for example the reduction of vein 11 of the fore wing to a short cross-vein linking veins 10 and 12 in *Cyaniriodes* (Poritiinae) and in *Pistoria* and *Oraidium* (Polyommatinae), or the possession of scent brands on the abdomen associated with hair brushes on the hind wing in such diverse Lycaenid genera as *Poritia*, *Pilodeudorix* and *Purlisa*, as well as in a few Nymphaloid genera. When two or more unusual characters are shared the probability of coincidence is decreased, and one may be faced with many perplexing problems. For example the genera *Catapaecilma* and *Hypochrysops* (Theclinae) share an uncommon form of antenna in which the nudum is divided into regular, rectangular segmental blocks by bands of scales commencing half-way down the club and continuing down the shaft (pointed out for *Hypochrysops*, but missed for *Catapaecilma*, by Forbes, 1957); they also have in common metallic silvery markings on the under surface of all wings (a very unusual feature except in Aphnaeini) with the usual Lycaenine pattern somewhat modified. In other characters the two genera are very dissimilar, for example in eyes, palpi, male fore tarsus, the possession of three hind wing tails and curious secondary sexual characters in *Catapaecilma* and taillessness and absence of secondary sexual characters in *Hypochrysops*. Moreover the male genitalia of both, though falling broadly within the Thecline pattern, do not suggest close relationship. Because of so many differences it is not possible to attribute to them a close phylogenetic origin. A still more perplexing problem is presented by the African genus *Uranothauma* and the Papuan genus *Callictita* (both Polyommatinae). Several species of the former genus, including *U. nubifer* (Trimen), agree with *Callictita* in their external characters, notably in possessing secondary sexual characters quite unlike those found in any other Lycaenid genus except *Drina* (Theclinae), comprising a dense raised patch of specialized hair and short plume scales on the fore wing disc. In addition eyes, antennae, palpi, legs, venation, pattern and wing shape, including a small tornal lobe on the hind wing (a feature otherwise only found in Polyommatinae in a vestigial state in *Cacyreus*), are all generally similar. So many resemblances in geographically widely separated genera would appear to be beyond the bounds of coincidence or even of chance convergence. Yet their male genitalia are quite unlike. Those of *Callictita* (Text-fig. 89) are very attenuated and have two most abnormal features, namely that the brachia arise from the outside of the uncus and tegumen, whilst the penis has a curious, trough-like "footstalk' (a feature otherwise found in Polyommatinae only in a very reduced form in *Zizula* and *Brephidium*, though occurring rarely in different forms in some other Lycaenid subfamilies). The genitalia of *U. nubifer* (Text-fig. 91), which differ considerably from those of the rest of the genus (Text-fig. 100), are stout and compressed but otherwise of fairly normal Polyommatine pattern except for an unusual juxta, which is of the normal furca type but bears two additional, less strongly chitinized processes directed caudad and connected to the inner faces of the valvae by a membrane studded with fine hairs. Such marked genitalic differences seem to rule out the possibility that *Callictita* and *U. nubifer* should have a close common ancestor. I cannot satisfactorily explain their many similarities, but tentatively suggest that they may be due to convergence under the influence of common factors in the remote past when the ancestors of each may have coexisted in Africa, the descendants of *Callictita* having since died out there and in all intervening areas. I therefore place *Uranothauma* and *Callictita* in separate, though adjacent, sections.

SUMMARY OF THE PROPOSED CLASSIFICATION

- **LIPTENINAE** Röber
  - **PENTILINI** Aurivillius
    - ***Alaena*** section
    - ***Pentila*** section
    - ***Telipna*** section
  - **LIPTENINI** Rober
    - ***Durbania*** section
    - ***Mimacraea*** section
    - ***Liptena*** section
    - ***Iridana*** section
    - ***Epitola*** section
- **PORITIINAE** Doherty
- **LIPHYRINAE** Doherty
    - ***Liphyra*** section
    - ***Aslauga*** section
- **MILETINAE** Corbet
  - **MILETINI** Corbet
    - ***Miletus*** section
    - ***Megalopalpus*** section
  - **TARAKINI trib. n.**
  - **SPALGINI** Toxopeus
    - ***Spalgis*** section
    - ***Feniseca*** section
  - **LACHNOCNEMINI** Clench
- **CURETINAE** Distant
- **THECLINAE** Swainson
  - **LUCIINI** Waterhouse & Lyell
    - ***Lucia*** section
    - ***Hypochrysops*** section
  - **THECLINI** Swainson
    - ***Thecla*** section
    - ***Amblopala*** section
  - **ARHOPALINI** Bingham
    - ***Arhopala*** section
    - ***Semanga*** section
    - ***Surendra*** section
  - **OGYRINI** Waterhouse & Lyell
  - **ZESIINI** Swinhoe
    - ***Zesius*** section
    - ***Jalmenus*** section
  - **AMBLYPODIINI** Doherty
  - **CATAPAECILMATINI trib. n.**
    - ***Catapaecilma*** section
    - ***Acupicta*** section
  - **OXYLIDINI trib. n.**
  - **HYPOTHECLINI trib. n.**
  - **LOXURINI** Swinhoe
    - ***Loxura*** section
    - ***Neomyrina*** section
    - ***Drina*** section
  - **HORAGINI** Swinhoe
  - **CHERITRINI** Swinhoe
    - ***Cherita*** section
    - ***Dapidodigma*** section
  - **APHNAEINI** Distant
    - ***Aphnaeus*** section
    - ***Pseudaletis*** section
  - **IOLAINI** Riley
    - ***Iolaus*** section
    - ***Britomartis*** section
    - ***Hemiolaus*** section

- **REMELANINI trib. n.**
- **HYPOLYCAENINI** Swinhoe
- **DEUDORIGINI** Doherty
  - ***Deudorix*** section
  - ***Capys*** section
- **TOMARINI trib. n.**
- **EUMAEINI** Doubleday
  - ***Eumaeus*** section
  - ***Trichonis*** section

LYCAENINAE Leach

- ***Lycaena*** section
- ***Heliophorus*** section

POLYOMMATINAE Swainson

- **LYCAENESTHINI** Toxopeus
- **CANDALIDINI trib. n.**
- **NIPHANDINI trib. n.**
- **POLYOMMATINI** Swainson
  - ***Cupidopsis*** section
  - ***Una*** section
  - ***Petrelaea*** section
  - ***Nacaduba*** section
  - ***Theclinesthes*** section
  - ***Upolampes*** section
  - ***Danis*** section
  - ***Jamides*** section
  - ***Catochrysops*** section
  - ***Lampides*** section
  - ***Callictita*** section
  - ***Uranothauma*** section
  - ***Phlyaria*** section
  - ***Cacyreus*** section
  - ***Leptotes*** section
  - ***Castalius*** section
  - ***Zintha*** section
  - ***Zizeeria*** section
  - ***Famegana*** section
  - ***Actizera*** section
  - ***Zizula*** section
  - ***Brephidium*** section
  - ***Everes*** section
  - ***Pithecops*** section
  - ***Azanus*** section
  - ***Eicochrysops*** section
  - ***Lycaenopsis*** section
  - ***Glaucopsyche*** section
  - ***Euchrysops*** section
  - ***Polyommatus*** section

NOTES ON SELECTED CHARACTERS

The characters which I have selected, other than the male genitalia, are all external ones, since these are the most convenient for making quick identifications. Failure to investigate other internal structures, and in particular the female genitalia, may be a serious omission. Still more serious omissions of the prerequisites of a sound classification, as propounded by Ford (1955: 231), are failure to examine the data given by the selected characters on a statistical basis, neglect of genetic, cytological and, above all, chemical methods, and failure to use physiological data other than by intuition. Investigations of so comprehensive a nature would involve a lifetime study by more than one specialist and are quite beyond my capacity. However, it is to be hoped that they will be undertaken by others and that their results will confirm the relationships suggested by the few morphological and phenotypical characters which I have selected. In the meantime my proposed classification must obviously be regarded as highly tentative; hence the title of my paper.

I deal below with the selected characters in turn, as far as possible contrasting the subfamilies and other subordinate groups with one another. In this way I hope to spare readers the tedium of having to read through a whole series of subfamily, tribal and section diagnoses in order to extract a morsel of comparative information. It also enables me to shorten the keys by omitting characters that are not essential for identification. I have included many peculiar features which appear to have little or no value in higher classification, since occurring in only a few species, in the interests of presenting a more complete picture of each group. In all cases the groups are those listed on pp. 381–382.

CHARACTERS OF THE ABDOMEN AND MALE GENITALIA

As there is a regrettable lack of uniformity amongst authors over the nomenclature of the male genitalia, I label one or more examples of each term which I employ for the various components in Text-figs 2–121 (for abbreviations used see pp. 469–470). I take as the standard pattern of male genitalia one in which all the component parts are present, symmetrical and of average development. Deviations from standard are so frequent that it is difficult to know what classificatory value to put upon them. It is tempting to suppose that marked abnormalities, such as the additional dorsal structures of unknown homology and function which occur in the *Brephidium* section of Polyommatini (text-fig. 109; also Stempffer, 1967: figs 218–221), must be of ancient origin and major taxonomic importance. Such may not be the case. As pointed out to me by Holloway (in litt.), specialization for a particular mode of life tends to produce bizarre morphological characters. Such evolution is usually an 'evolutionary backwater', where ecological restriction and rarity, followed by further specialization, results in continually narrowing the ecological niche of the species until it becomes extinct. From our present knowledge it is impossible to correlate the bizarre dorsal structures of the *Brephidium* section with a particular niche, but the probably relict distribution of the few extant species, in S. Africa and the Sonoran area of N. America extending to the northern part of the Neotropical Region, suggests that they may be on the road to extinction despite their abundance in their present, limited areas of distribution. As already pointed out, butterflies may undergo quite fundamental changes in the male genitalia more quickly than equivalent changes in pattern or other characters. I therefore doubt whether the male genitalia have the overriding importance in classification which is generally attributed to them; in particular I think it unwise to base major taxonomic divisions on bizarre characters (as in *Brephidium*) without supporting evidence from other distinctive characters. It is perhaps of significance that Mayr (1963 : 103) records that the genitalia of insects are nowadays regarded as of only slight importance as isolating mechanisms.

The genitalia of many species of Lipteninae have been described and figured by Stempffer, sometimes in collaboration with Bennett, in a series of admirable papers. The subfamily shares with Poritiinae a feature not found elsewhere in the family: the saccus (Text-figs 3–15), when developed, is directed caudad. In Pentilini it is more or less inflexible, but in Liptenini it is flexibly bent back and when the genitalia are withdrawn from the abdomen during dissection it may get retracted so that it ends up pointing in a normal cephalad direction; it must be borne in mind that microscope preparations may, on this account, give a misleading impression of its position in nature. A conventional juxta (Text-fig. 2) does not occur, but a homologous structure is a distinctive feature of Liptenini. This comprises a quite well-sclerotized sheath wrapped round the basal or subbasal part of the penis, from which a pedicel, of variable length, descends to hinge with the apices of the sacculi (Text-fig. 2). The pedicel/sheath complex is not always simple. For example, in *Baliochila singularis* Stempffer & Bennett and, to a less striking degree, in *Cnodontes* and *Tetrarhanis* (Text-fig. 13), the pedicel is continued as two long arms above the point of attachment to the penis. In the typical species of *Baliochila* (Text-fig. 10) and

Eresinopsides two rather similar arms, termed 'special processes' by Stempffer, are attached to the top of the sheath and also, by a semi-membranous connection, to the inner face of the tegumen. A much shorter, unpaired dorsal process of the pedicel is borne by *Falcuna*. Brush organs[2] occur in a number of genera, almost always in the *Epitola* and *Iridana* sections of Liptenini, less commonly in the *Liptena* section and not at all, so far as known, in the *Mimacraea* and *Durbania* sections of Liptenini nor in Pentilini. At any rate I have not found them in the all too few preparations I have made of the last three groups, nor are they reported by Stempffer or Clench. Total absence, if substantiated, would be of importance in confirming the evidence of other characters for the separation of these groups. Their sporadic appearance is parallelled by the equally sporadic appearance of other secondary sexual characters in this and other subfamilies, but this inconstancy does not greatly detract from their significance as taxonomic characters. The brush organs (Pl. 6, figs 35, 36) comprise paired sacs bearing tufts of large scales, usually boat-shaped but sometimes, for example in *Aethiopana* (Text-fig. 14) *Phytala*, *Powellana*, very long and narrow like daffodil leaves, which are attached to the lower end of the vinculum and saccus. The sacs appear to be capable of inflation but otherwise very limited movement, but no doubt the caudal inclination of the saccus enables them to be brought into action when the valvae are opened without the need for further eversion. The scales also appear to be capable of inflation.

The genitalia are remarkably homogeneous in the *Epitola* and *Iridana* sections, but exhibit a very wide range of patterns in the *Liptena*, *Mimacraea* and *Durbania* sections of Liptenini. Stempffer (1967 : 269) suggests that in the latter groups we are confronted with many different lines of descent, some of them very ancient, which have undergone a complete modification of their original external appearance and by convergent evolution have acquired similarities of pattern and development. As the component genera have presumably co-existed and been acted upon by the same external factors for a very long time, and also as some of the genera are mimetic, convergence may well be the correct explanation. However I do not find it entirely satisfying, and an alternative explanation, admittedly no more convincing and inconsistent with the view that the genitalia are not important as isolating mechanisms, is that the differences are due to divergent evolution of the genitalia favouring the prevention of interbreeding between externally similar forms. This does not imply a literal acceptance of the old and discredited 'lock and key' theory; but I do think that when the genitalia of related species differ widely they must have considerable influence as isolating mechanisms. Moreover it seems possible that there may be a correlation between, on the one hand, the homogeneous genitalia of the *Epitola* and *Iridana* sections and the almost invariable presence of another, and perhaps more effective, isolating mechanism in the form of brush organs, possibly diffusing specific scents and, on the other hand, the heterogeneous genitalia and absence of brush organs in the other three sections.

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[2] The term brush organ was apparently first used by Pierce (Varley, 1962). Both Clench and Stempffer use the term coremata. I prefer the former, as I believe that coremata should be used only for the 'eversible sleeve-like bags sometimes of great length and covered with hairs' (Janse, 1932) which certain moths can extrude from a variety of positions within the abdomen.

The genitalia of Pentilini differ from those of Liptenini, and indeed from all other Lycaenidae, in having the vinculum interrupted and hinged at the tergal-sternal suture. I divide the tribe into three sections on the basis of further differences in the genitalia. In the *Alaena* section (Text-fig. 7) the genitalia are symmetrical, with normal brachia and with valvae which are fused, not hinged, to the lower part of the vinculum and are dorsally conjoined by a broad transtilla passing above the penis. In the *Pentila* section (Text-fig. 6) the brachia are aborted, the valvae are fused to the vinculum and the whole armature is asymmetrical. A further peculiarity is that the penis appears to have a part of the vesica permanently everted into a long, recurved flail (Stempffer, 1967, says that it was everted in all the specimens he had examined and my more limited experience has been similar), but the basal portion of the vesica, bearing a large cornutus, is found normally retracted within the penis. The *Telipna* section, comprising *Telipna* (Text-fig. 8) with symmetrical genitalia and *Ornipholidotos* (Text-fig. 9) with asymmetrical genitalia, differs from the two preceding sections in two respects. Firstly, what I take to be the valvae, but termed special processes by Stempffer, are hinged by a membrane to both upper and lower parts of the vinculum. Secondly, the saccus, which may be partially divided, is distally fused with the eighth sternite, which in turn is more strongly sclerotized than usual. The complex formed by the lower part of the vinculum, saccus and sternite is capable of up and down movement and presumably plays some part in clasping the female during copulation. Stempffer (1967 : 10, 23) regarded this complex as the valvae, but I cannot agree with his interpretation; compare his figs 4 and 14 with my Text-figs 8 and 9.

The genitalia of Poritiinae show the affinity of this subfamily to Lipteninae in two respects. Firstly, the saccus, which is quite strongly developed in *Deramas* (Text-fig. 4) and *Zarona*, less so in *Simiskina* and *Cyaniriodes* (Text-fig. 5) is directed caudad. Secondly, the penis of *Cyaniriodes* is surrounded by a sheath borne on a pedicel, exactly as in Liptenini. In *Deramas* and *Zarona* there is also a pedicel which descends between, but is not hinged to, the sacculi; the latter have strong scimitar-shaped sclerites hinged to their apices which loosely embrace the ventral part of the penis, but they are not united to the pedicel nor to each other and so cannot be regarded as a juxta in the strict sense, although the whole arrangement is more or less homologous with a juxta. The remaining genera of Poritiinae (*Poriskina* not examined) possess neither pedicel nor sclerites, but the inner edges of the sacculi are thickened longitudinally, as though to act as a guide and support for the penis. A feature of the subfamily, first pointed out by Clench (1955), is the possession by both sexes of sparse tufts of bristles of unknown function on the ventral surface of a variable number of the abdominal segments. This feature appears not to occur in any other Lycaenid subfamily, but occurs rarely in Riodinidae, for example in *Laxita*. The genus *Poritia* bears scent brands on the sides of the male abdomen used in conjunction with hair tufts on the hind wing, a feature otherwise found in Lycaenidae only in the Thecline genera *Pilodeudorix* and *Purlisa*.

Liphyrinae have genitalia of a common-place pattern, including a true juxta. Absence of brachia helps to separate the *Aslauga* section (Text-fig. 17) from the *Liphyra* section (Text-fig. 16), but atrophy of the brachia is of such frequent occurrence in so many diverse groups that it can only be regarded as a character of very minor significance.

A probably significant feature of Miletinae is that the valvae are dorsally conjoined, or nearly so, by a membrane or some form of transtilla-like structure above the penis, a feature found also in Aphnaeini (Theclinæ). The union takes a number of different forms. In *Spalgis* (Text-fig. 22) union is by a weakly sclerotized membrane near the distal extremities of the valvae. In *Taraka* (Text-figs 24, 25), the only genus to lack brachia, union is by a more strongly sclerotized dorsal membrane and in addition the valvae are ventrally conjoined throughout most of their length. In *Feniseca* (Text-fig. 23) union is by a typical transtilla joining the proximo-dorsal extremities of the valvae. In *Lachnocnema* (Text-fig. 21) partial union occurs through two dorsal processes of the valvae, which have been termed labiles, shaped like bent arms, which are fused to the diaphragma along the inner edge of the upper arm, the lower arm being free and directed caudad. In *Thestor* (Text-fig. 20) there are two labiles which are contiguous on their inner edges but are joined to the valvae only by a membrane. In Miletini (Text-figs 18, 19) union is by a rather weakly sclerotized transtilla which is drawn forward to give a narrow bridge cephalad of the vinculum. The tribe also possesses a curious and unique feature named 'listron' by Fruhstorfer (1916). This comprises a pair of long apophyses arising from the proximal edge of the eighth tergite and directed cephalad, which recall female ovipositor lobes and sheathe the characteristic enormous, flattened uncus lobes. In addition the eighth sternite bears a pair of hair brushes. In general the genitalia of Miletinae are so diverse that it seems necessary on this account, as well as because of other external characters, to split them into a number of tribes and sections disproportionately large in relation to their small number of species.

The genitalia of Curetinae (Text-fig. 26), with a large hood-like uncus and valvae dorsally united by a central plate above the penis, show affinity with Riodinidae, as Shirôzu & Yamamoto (1957) have pointed out, and in particular with the tribe Abisarini.

The genitalia of the related subfamilies Theclinae, Lycaeninae and Polyommatinae tend to be rather similar. However the majority of Theclinae can be separated from the other two subfamilies by a combination of three characters: comparatively heavy dorsal structures, a penis widely open on the dorsal surface for the reception of the ductus and with the zone more or less central and, lastly, comparatively strong sclerotization of the subscaphium. The last feature, which for greater clarity has been omitted from all Text-figs other than Text-fig. 2, reaches its greatest development in *Surendra* where, as pointed out by Riley (1956), the subscaphium comprises a plate fused to and uniting the bases of the brachia. However the Thecline genitalia show a wide range of variation, and none of the above three characters are constant so that it seems impossible to find a reliable means of separating with certainty all Theclinae from the other subfamilies. Particularly puzzling is the very occasional occurrence of an atypical penis in which the ductus enters cephalad, as in *Chaetoprocta* (Text-fig. 31) (Theclini) or the *Tajuria mantra* (Felder) species group (Iolaini), both of which belong to large tribes which otherwise have a normal Thecline penis. The most specialized genitalia are found in Cheritrini, Oxylidini and *Britomartis*

(Iolaini). In Cheritrini the uncus and tegumen are sometimes fused and indistinguishable, with the consequent disappearance of the semi-membranous lateral window which is normally present in all Thecline genera, and the brachia are absent—a rather uncommon feature in Theclinae. In the Oriental Cheritra section the extreme of abnormality is shown by *Drupadia* and *Cowania* gen. n. (p. 450) (Text-fig. 42) in which the uncus-tegumen complex comprises large, widely-separated, triangular plates with their bases extending as far as the junction of vinculum and saccus. The African genus *Dapidodigma* (Text-fig. 53), forming a distinct section of Cheritrini, has a large hood-like structure above the penis, regarded as the fultura superior by Stempffer (1967 : 121, figs 108, 109) who describes in detail and figures the genitalia. Oxylidini are peculiar in that the normal function, and to some extent position, of valvae and juxta appear to be reversed. The valvae are small, rather rigidly fixed to the vinculum, directed upwards and seem to act as a furca-like support to the penis, whilst the juxta, most highly developed in *Syrmoptera* (Text-fig. 46), is directed caudad, is capable of up and down movement and appears to be designed for clasping the female during copulation. In *Britomartis* (Text-fig. 59), as pointed out by Riley (1956), there are curious chitinous structures of unknown function lying within the eighth sternite, which is itself strongly sclerotized and bifid, whilst the genitalia, which are smaller than usual, lie wholly within the eighth tergite. All the component parts are present but the valvae are fused, not hinged, to the vinculum, recalling a similar feature in Pentilini. If overriding importance were to be attached to the male genitalia, it would probably be necessary to place *Britomartis* in a subfamily by itself. However, apart from *Hypolycaena*-like antennae, its external characters accord well with those of Iolaini, of which it undoubtedly forms a component.

When dealing with the Holarctic Theclinae Riley (1956) was able to divide the genera into two basic genitalia types: the 'greyhound' type in which the vinculum is inclined, giving a streamline effect, the valvae are small and often ventrally conjoined, the penis is usually long and thin and the juxta is absent; and the 'bulldog' type in which the vinculum is more upright and a juxta is present. The greyhound type is constant in Deudorigini (Text-fig. 65), Tomarini (Text-fig. 64) and Eumaeini (Text-figs 66, 68), whilst the bulldog type is characteristic of Theclini (Text-figs 29–32), Arhopalini (Text-figs 33, 39, 40), Iolaini (Text-figs 55–57) and a number of other tribes. Unfortunately, however, a clear-cut distinction between the two types cannot be maintained on a world-wide basis. The first approach from the greyhound to the bulldog type is made by Hypolycaenini (Text-fig. 60), in which the valvae are rather Deudorigine-like and the juxta is absent, but in which the vinculum is usually comparatively broader and more upright. A few small genera link Hypolycaenini to Iolaini both in their external characters and male genitalia. One of these is *Remelana* (Text-fig. 61), which has a small U-shaped juxta but is otherwise of the greyhound type; its penis is furnished with an unusual cornutus resembling two long saw blades similar to the cornutus found in a few African *Hypolycaena* species. In *Remelana* loss of juxta by atrophy seems to be indicated. Another link genus is *Hemiolaus* (Text-fig. 58) which has the male fore tarsus and antennae of Hypolycaenini, but the eyes and secondary sexual characters of Iolaini.

The particular interest of its genitalia is that they appear to indicate a completely different way in which the juxta may be lost. Its juxta comprises a long, shallow, trough-like plate, briefly incised at its distal end, which, instead of being upright and giving support to the penis as in typical Iolaini, lies parallel to the valvae, which are unusually widely separated at their bases, and is joined to them almost throughout its whole length by a membranous connection near their ventral edges. It would seem that the juxta is evolving towards complete fusion with, and ultimate absorption into, the valvae. The fact that the headquarters of *Hemiolaus* is in Madagascar (four out of five species) suggests that it is a relict genus which, with *Remelana* and related genera, may represent the remnants of a bridge now reduced to isolated stepping stones, by which Iolaini and Hypolycaenini were once more broadly united.

Internal shelf-like ridges or linear thickenings of the genitalia occur in several tribes. A longitudinal ridge running across the lateral process of the tegumen to the point of attachment of the brachium is a good diagnostic character of Hypolycaenini (Text-fig. 60) and also of the *Arhopala* (Text-fig. 33) and *Semanga* (Text-fig. 40) sections of Arhopalini. More or less similar thickenings or ridges occur in *Ancema* and *Pseudotajuria* (Remelanini) (Text-figs 62, 63) and in some species of Eumaeini. More often in Eumaeini any ridge or thickening which may be present is obliquely slanted, and the same applies to Iolaini, in which internal thickenings occur less frequently. *Remelana* (Text-fig. 61) is unique in possessing a very wide dentate and corrugated ridge along the distal margin of the lateral process of the tegumen. In other tribes internal ridges do not seem to occur.

As already mentioned, brush organs occur in many Neotropical Eumaeini. A brush organ also occurs in an Oriental species of Iolaini, *Myrina jalindra* Horsfield, which recent authors have misplaced in *Charana*; the species requires a new genus, which will be named and described in a later publication. Those brush organs which I have examined fall broadly into three types; there may well be others. The commonest type comprises paired tufts of long specialized scales arising from sacs mounted on the mid-proximal edge of the vinculum, which is usually somewhat shouldered for the purpose but in *Thereus* (Text-fig. 68) is drawn out into a long arm directed proximad, and apparently incapable of much further extrusion. As well as in *Thereus* this type occurs in *Theritas, Arcas, Pseudolycaena, Evenus, Molus, Atlides, Macusia, Mithras, Rekoa, Paiwarria, Lamprospilus, Heterosmaitia* and a considerable number of unclassified '*Theclas*'. A variant of this type occurs in *Chalybs*, in which the tufts are situated at the base of the vinculum and are directed distad; it shows an approach to the second type, confined to the curious little genus *Ipidecla*, in which the tufts are mounted on sacs below the bases of the valvae. The third type comprises compact hair-pencils mounted on an invagination of the internal integument of the abdomen; in *Eumaeus* and *Theorema* these pencils are almost as long as the abdomen and appear to be capable of full eversion; in *Brangas* the pencils are much shorter and appear to be capable of only partial eversion, so that to a certain extent this genus links the *Thereus* group with *Eumaeus*. Further study may show that it is possible to subdivide the Eumaeini according to the presence and type of brush-organ. Another curious feature is the presence of a deep pit on the ventral surface of the abdomen in *Eumaeus*, and also in a much less marked form in *Evenus*. The scales lining the pit are rather narrow, but do not give the impression of being scent scales, and I do not know what purpose the pit serves.

In a few species of Theclinae the end of the female abdomen bears a tuft of specialized scales; a well-known example is the European species *Nordmannia acaciae* (Fabricius). In *Chaetoprocta* (Theclini) and *Pseudaletis* (Aphnaeini) the tufts are particularly large. In the former the specialized scales are long and very deeply incised, resembling a two-pronged fork, and adhere to the eggs, which are laid in a single mass (like some moths, for example the Gypsy Moth, *Lymantria dispar* (L.)); they presumably serve as an effective 'chevaux-de-frise' against predators. In *Pseudaletis* the scales are shaped like small spoons with very long handles, somewhat resembling the scales of *Nordmannia acaciae*. Probably they serve the same purpose as in *Chaetoprocta*, but as far as I know their function has never been studied, and it seems possible they may diffuse scent either to attract males or to repel predators. It is not possible to use such an uncommon character in higher classification, and its occurrence in widely separated genera must be due to convergence, or even to coincidence.

The Lycaeninae (Text-fig. 69) have male genitalia characterized by long digitate uncus lobes and long brachia, and show great uniformity throughout the small subfamily. Saccus and juxta are always well developed, and the long to moderately long penis is widely open on the dorsal surface for the reception of the ductus with supra- and subzonal portions subequal, as in many Theclinae.

The male genitalia of Polyommatinae, with the exception of the *Brephidium* section of Polyommatini (Text-fig. 109) already mentioned on p. 383, are more homogeneous than those of Theclinae. Nevertheless they are of importance in defining the sections of the enormous tribe Polyommatini, since some external characters such as pilosity of the eyes or type of scaling on the palpi, which are often of diagnostic assistance in other groups, are so variable, even infra-generically, as to be of very little use in classification, whilst other characters, such as the position and number of hind wing tails, are equally valueless because of their constancy. I discuss below each component of the male genitalia, drawing attention to any feature which has classificatory value.

(a) *Vinculum.* Its shape, especially when viewed laterally, may provide useful characters. A pronounced subtriangular extension cephalad, as in *Rhinelephas* (Text-fig. 117), serves to define the large, predominantly Oriental *Lycaenopsis* section, even though more or less similar extensions crop up occasionally in other sections, for example in some '*Castalius*' species (Text-fig. 104). The absence or very weak development of a saccus is a character of Niphandini (Text-fig. 71) and of all the sections of Polyommatini other than the small *Una* (Text-fig. 75) and *Petrelaea* (Text-figs 76, 78) sections, whilst its constant presence in Lycaenesthini (Text-fig. 70) is an important character of this tribe.

(b) *Tegumen.* Is usually rather weakly developed and seldom gives good characters at the section level.

(c) *Uncus.* The type of uncus has been used in the past to define so-called 'subfamilies', down-graded by me to sections of Polyommatini. Its shape is variable, ranging from a long, tapered spike in *Talicada* (Text-fig. 116) through *Everes* and other closely related genera, in which the shorter uncus is at most only a little incised, into *Azanus* (Text-fig. 114) in which it is narrowly divided into separate lobes, and on through genera showing a gradually increasing gap between the lobes. I do not regard the uncus as of fundamental importance, but its shape certainly helps to define some sections, notably the *Everes* and *Azanus* sections.

(d) *Brachia*. These are usually simple curved hooks. But in the *Leptotes* section (Text-fig. 105) they are often more or less dentate or serrate, whilst a good character of Candalidini (Text-figs 72, 73) is that they always bear a branch, usually vestigial, near their apices. Absence or partial atrophy of the brachia occurs sporadically, for example in *Erysichton* (*Nacaduba* section), but constant absence is a good character of the *Upolampes* section (Text-figs 80–88) whilst absence in all but a few of the *Lycaenopsis* section is also significant.

(e) *Valvae*. These can seldom be relied upon for good characters, though in a few sections, notably *Polyommatus* and *Euchrysops*, they show unusual constancy. On the other hand in some genera, for example *Nacaduba*, inter-specific differences may be enormous.

(f) *Penis*. This organ appears to be more important in the classification of the subfamily than any other component of the genitalia. The most useful characters are the point of entry of the ductus, the presence or absence of a coecum and the position of the zone. In Lycaenesthini, Candalidini and Niphandini the penis is widely open on the dorsal surface and the sub- and suprazonal portions are subequal, as in nearly all Theclinae. In Polyommatini the ductus may enter dorsad, with or without a coecum, or cephalad or even on the ventral surface. In most sections the suprazonal portion is very short, but it is more nearly equal in several sections, including the *Polyommatus* (Text-figs 120, 121), *Euchrysops* (Text-fig. 119) and in some members of the *Castalius* (Text-fig. 104) sections. These three all have the ductus entering cephalad and also usually have alulae at the zone, and thus may be more closely related to one another than to any other section. Frequently the penis ends in a single or double Chapman's process. The most curious penis, bifid and resembling a bird's beak, occurs in the *Brephidium* (Text-fig. 109) and *Zizula* (Text-fig. 110) sections, suggesting that they must be closely related despite the presence of abnormal and additional dorsal structures in the former which are absent in the latter. The presence of cornuti or their type do not appear to be of significance; for example, in the *Upolampes* section cornuti range from complete absence through an increasingly complicated series to an astonishing assemblage of every size and shape in *Pistoria* (Text-fig. 86). As the fascinating little *Upolampes* section is remarkable for unusual features in genitalia and venation, I have figured the genitalia of all the described component species (Text-figs 80–88).

(g) *Juxta*. The presence of a juxta is a constant feature of the family. Usually it is U-, V- or Y-shaped, and has been aptly named the furca, but this shape is not confined to the subfamily. The juxta shows considerable variation in size, especially in Candalidini, where it reaches its maximum in *Nesolycaena* (Text-fig. 73), whilst in a few species of '*Holochila*' it is highly asymmetrical. When not shaped like a furca, as in the *Una* section (Text-fig. 75), or when modified, as in most of the *Castalius* section, its shape may be of diagnostic importance. It is sometimes difficult to determine whether sclerotizations below the penis should be regarded as part of the juxta or mere sclerotizations of the anellus; occasionally both, with the valvae, form a confusing complex, as in some species of the *Upolampes* section.

(h) *Abnormal features.* The curious dorsal structures of the *Brephidium* section have already been referred to; for further details see Stempffer (1967). *Cacyreus* (Text-fig. 102) has a quite prominent scaphium which, viewed dorsally, appears as a comparatively weakly sclerotized and more or less triangular process between and below the uncus lobes. An apparently unique feature occurs in *Psychonotis* (Text-fig. 93); the diaphragma incorporates in its upper half a quite strongly sclerotized semi-circular band which is membranously connected to the lateral processes of the tegumen and forms with the juxta an almost continuous ring loosely surrounding the penis. This band does not appear to be homologous with the sclerotization of the subscaphium which, though often well-developed in other subfamilies, is always absent or very weak in Polyommatinae. The *Polyommatus* section (Text-figs 120, 121) almost always has a suspensorium consisting of two moderately sclerotized, rod-like processes descending from the inner face of the tegumen and appearing to act as a guide to the penis, which pierces the diaphragma unusually high up. In the Sonoran and Neotropical species of this section a further peculiarity is the frequent presence of a sagum (Nabokov, 1945) comprising paired or conjoined sclerites, sometimes very large and dentate, which loosely sheathe the penis. The *Zizula* and *Zizeeria* sections appear to be related because of the possession by *Zizula* (Text-fig. 109) and *Zizina* (Text-fig. 106) of long spine- or rod-like processes of the valvae. Other unusual features, such as embellishment of the valvae or uncus lobes by bristles or tufts of long hairs occur sporadically and appear to be of little value in classification.

Characters of the Head

(a) *Antennae.* At the family level the antenna, and in particular the presence and arrangement of grooves and carinae, is of primary importance, as shown by Jordan (1898). But in the ungrooved and unridged antenna of Lycaenidae it is difficult to find precise, easily examined characters of use in classification. I have not attempted an examination of the sensory hairs clothing the nudum (unscaled portion) nor of the bristly sensillae borne on most of the segments, since preliminary investigation under low power showed no promise of results likely to be of use in a key. Riley (1956) used the absence of white annulations outlining the shaft (flagellum) segments as a tribal and generic character in the Holarctic Theclinae, but I have not found it to be of significance; in some genera, for example *Arhopala*, the annulations vary interspecifically from absence to prominence. It appears to be the rule for the total number of segments to vary individually, especially in Miletini, for example *Allotinus horsfieldi* (Moore) varying from 51 to 62 segments and *Allotinus unicolor* Felder varying from 43 to 53 segments in a dozen Malayan examples of each chosen at random. I have not found any convincing evidence of sexual differences in the number of segments, even in *Niphanda*, a genus exhibiting the most marked dimorphism in the shape of the club and extent of the nudum. Clench (1955) made use of a comparison of the length of the longest shaft segment over the length of an average club segment, but it seems to me that the relative length and breadth of the central shaft segments and also the total number of segments more often give helpful, if imprecise, information as to relationships.

In Lipteninae the antennae are variable and of little use for classification even at the generic level. A flattened and abrupt club, sometimes with a dentate profile, to which the nudum is confined is usual in Pentilini and in the *Durbania*, *Mimacraea* and *Liptena* sections of Liptenini, and the same type occurs rarely in the *Epitola* section (for example in *Epitolina*) alongside antennae with cylindrical clubs and nuda extending down the shaft.

In Poritiinae the form of antenna is constant, with a cylindrical club and nudum extending in a taper down the shaft. The same applies to Liphyrinae and Miletinae, except that the curious little species *Taraka mahanetra* Doherty has the nudum confined to a rather abrupt club. Curetinae also have a cylindrical club and tapered nudum, but possess an unique structure of unknown function in the form of a fringe of about a dozen bristles, about as long as the shaft is wide, borne on the ventral surface of the basal three or four shaft segments.

The possession of a cylindrical club has often been used in keys as a character to separate Theclinae from Lycaeninae and Polyommatinae, but there are a number of exceptions in Eumaeini and Hypolycaenini. The abruptness of the club may vary greatly within the tribes of Theclinae, but the club is always gradually incrassate in Arhopalini, Amblypodiini and Zesiini. The nudum is more or less tapered and commonly extends down the shaft in an unbroken taper or in a series of detached patches of decreasing size, and is often more extensive in the female than in the male. Its rather constant extent is a character of some tribes, but in others, for example Aphnaeini and Eumaeini, its extent is extremely variable. The number and length of the segments is also a fairly good character of some tribes, for example in Arhopalini their number always exceeds forty and about the middle of the shaft their length at most barely exceeds their width, whereas in Hypolycaenini their number is always below forty and the shaft segments are at least three times as long as wide. However some tribes, and the subfamily as a whole, exhibit a wide range in the number of segments. The smallest count I have made is 23 in several species of Eumaeini the largest 65 in *Arhopala hercules* (Hewitson); no doubt a larger count would extend these figures in both directions.

In Lycaeninae the club is more or less flattened and the nudum is confined thereto. The segments usually number between 30 and 35, and on the shaft are rather long and narrow, as in Hypolycaenini.

In Polyommatinae the tribe Niphandini is well characterized by the exceptional degree of sexual dimorphism; in the male the club is moderately abrupt and usually somewhat flattened beneath, and the nudum is confined to it; in the female the club is long, gradually incrassate and cylindrical (except that there is a small area of flattening near the apex in *Niphanda fusca* (Bremer & Grey)) and the nudum extends down the shaft almost to its base in an unbroken taper. The antennae also provide a fundamental character in Candalidini; the nudum is crossed by segmental bands of scales which commence near the tip of the club and extend a varying distance down the shaft. The same type of banding also occurs in the Thecline tribes Luciini and Catapaecilmatini, though in these the banding commences about half-way down the club; this similarity appears to be due to convergence. In Lycaenesthini and Polyommatini the nudum ends abruptly and is always confined to the club, which is more or less flattened or hollowed beneath. In some species of the former tribe the degree of flattening may be very slight in life, but the hollow club is liable to collapse after death in such a way that the line of flattening divides the nudum into two nearly equal parts, whereas in the latter tribe the nudum is almost wholly contained within the flattened or hollowed portion of the club. In Polyommatinae the number of segments is nearly always under forty and the shaft segments are long and narrow, at least three times as long as wide even in genera with an exceptionally high number of segments such as *Danis* with about 54 segments or *Niphanda* with about 44–49 segments.

(b) *Eyes.* Smooth eyes are a character of Lipteninae, Poritiinae (except some *Deramas* species), Liphyrinae, Miletinae (except *Lachnocnema*) and Lycaeninae. Hairy eyes are a character of Curetinae and the Thecline tribes Deudorigini, Tomarini, Hypolycaenini and Eumaeini (though very inconspicuously haired in a few Neotropical genera) and also of the majority of Theclini. In the remaining Thecline tribes smooth eyes are the rule with but few exceptions. In Polyommatinae smooth or hairy eyes are of little help in classification even at the generic level.

(c) *Palpi.* I have found these of but slight use in classification; moreover sexual differences are often considerable, which restricts still further their convenience as diagnostic characters. Reuter (1896) drew attention to a specialized area in the butterflies on the inner face of the basal joint, which he termed the 'basalfleck'. This area, which occurs in both sexes, is devoid of scales, corrugated and bears minute cones ('kegel'). Its function is unknown and does not appear to have been investigated histologically. Its extent is variable; in Lipteninae and Poritiinae it extends at least the full length of the basal joint and may be continued on the second joint. In Polyommatinae, Lycaeninae and some tribes of Theclinae the cones are concentrated into a single or partially double bi-coloured patch. The cones are extremely small compared with those of other families and any worthwhile examination would have to be carried out under a very high magnification; I have not attempted one. Reuter erected the tribe Miletidi on the basis of the presence of very fine hairs on the basal-fleck in *Miletus* and *Allotinus*. These hairs also occur in the African section of Miletini, and appear to be a good tribal character since they do not occur in the other tribes of Miletinae nor in the comparatively closely related Liphyrinae.

The relative length of the joints is occasionally of assistance at tribal or lower level. In the vast majority of genera in males the third joint is shorter than half the second joint, but a third joint at least half as long as the second joint is a constant character of Hypolycaenini and Remelanini. The scaling of the second joint may sometimes be useful, appressed flat or slightly bristly scales being characteristic of Lipteninae (with a few exceptions), Poritiinae, Liphyrinae, Miletinae (except *Lachnocnema*) Curetinae and several Thecline tribes. Hairy palpi are constant in

Lycaeninae, whilst in Polyommatinae the scaling, like the pilosity of the eyes, is so variable as to be almost useless for classification. Very small palpi occur in the *Liphyra* section of Liphyrinae, possibly having some connection with the complete atrophy of the proboscis, but very small palpi also occur in Pentilini, in *Pseudaletis* (Theclinae: Aphnaeini) and in a few Neotropical Eumaeini in all of which a proboscis of normal dimensions is present. Slender, asymmetrical palpi are constant in Miletini, and in Tarakini occur in *Taraka mahanetra* Doherty and to a lesser and variable extent in *T. hamada* (H. Druce).

(d) *Proboscis.* So far as I am aware the proboscis has not hitherto been used in Lycaenid taxonomy. However it is quite useful at the subfamily level, the important diagnostic feature being the development of sensory hairs on the outer surface and sides of the shaft. The development of the terminal sensory area bearing papillae (? taste-buds) may be of some subsidiary value, but is not a convenient character to use in set specimens as relaxing is usually necessary, and I have not tried to investigate it fully. In Lipteninae (except the *Durbania* section in which the proboscis is very short and apparently undergoing atrophy) and Poritiinae the shaft bears few, irregularly spaced, fine hairs and in the latter subfamily the terminal papillae are quite prominent. In Liphyrinae and Miletinae there is a regular arrangement of quite closely spaced hairs, except in those genera in which the proboscis is completely absent (*Liphyra*, *Euliphyra*, *'Aslauga' pandora* H. H. Druce) or very small and apparently undergoing atrophy (some *Aslauga* species, *Taraka*). In Curetinae both sensory hairs and terminal papillae are particularly strongly developed. Theclinae, Lycaeninae and Polyommatinae have a smooth proboscis, except that short sensory hairs are quite well developed on the inner surface of the shaft in a number of Neotropical Eumaeini and also in *Callictita* (Polyommatinae). Terminal papillae are often quite well developed in the first two subfamilies, but in Polyommatinae are weakly developed or absent except in the small *Una* section.

Characters of the Legs

The most perplexing character of the Lycaenidae is the occurrence of a segmented, clawed and fully functional fore tarsus in males of a number of quite diverse genera, whereas in the great majority of the genera the male fore tarsus is partially aborted and fused to a single clawless segment. In other butterfly families the development of the fore legs is relatively constant in each sex, and these limbs have been widely used as primary diagnostic characters at the family level. It seems certain that a segmented and fully functional fore tarsus in both sexes represents the primitive state in the butterflies, and consequently those Lycaenid genera bearing such tarsi in the male as well as in the female have usually been regarded as the most primitive in the family (for example see Shirôzu & Yamamoto, 1956). I am by no means convinced that this view is invariably correct, although I think it is possibly so in the case of Liphyrinae and the Miletine tribe Lachnocnemini, in which the males of all the included species have a segmented fore tarsus; indeed, I have assumed later (see Table A) that it is so. But within Theclinae a segmented male fore tarsus occurs in the following genera, some of which appear on other grounds to be only weakly separated from genera having an aborted male fore tarsus: *Artopoetes*, *Japonica, Ussuriana, Coreana* and *Protantigius* (Theclini), *Sukidion* and *Pratapa* (Iolaini), *Titea* gen. n. (p. 452) (Luciini) and *Theclopsis* (Eumaeini). Amongst the foregoing genera the most interesting case is that of *Pratapa.* It does not seem to have been noted previously that the type-species, *P. deva* Moore, has a segmented male fore tarsus, whereas *P. icetas* (Hewitson), a species having close similarity in male genitalia as well as in all external characters (including secondary sexual characters), has the usual aborted fore tarsus, as do the remainder of the species currently included in this 'omnibus' genus. In Iolaini, as already pointed out on p. 378, there is great diversity of pattern of male genitalia above the species-group level, so that the occurrence of a similar pattern in *P. deva* and *P. icetas,* taken in conjunction with their other similarities, would be almost beyond the bounds of coincidence or convergence if the one was a primitive and the other an advanced species. I think, therefore, that it can be taken as virtually certain that the two species are closely related and that the differentiation of fore tarsi occurred recently. Moreover, despite the principle of irreversibility which would normally prohibit the reacquisition of a character once lost, I think it probable that the segmented fore tarsus is a secondary reacquisition from the aborted state. Further indirect evidence that this may also have occurred in the other Thecline genera with a segmented fore tarsus is supplied by the mere fact that these genera are spread between four tribes, of which I consider two to be phylogenetically quite advanced (see Text-fig. 1 on p. 471). If the segmented fore tarsus was primitive, it would be necessary to believe that the ancestors of all these tribes had such a fore tarsus and that the aborted state had later evolved independently in each tribe—a by no means impossible hypothesis, but one which I regard as inherently improbable. Since the Lycaenidae invariably have the female fore tarsus unmodified, the aborted male fore tarsus must be a sex-controlled character. Originally I assumed that the males of all species must carry the gene for the segmented 'female' condition and that reacquisition of a segmented tarsus might occur through mutation or through hybridization of stocks having different sex-determinant values in their genetic make-up. But on referring these ideas to Professor Clarke he replied with the much better suggestion (proposed by his wife Mrs C. A. Clarke) that the gene controlling the fully functional fore tarsus might be located on the Y chromosome, so that it would normally be confined to females; but occasionally there might be crossing over between the Y and X chromosomes so that the males would show it, although the expression might be modified by the total gene complex. It seems at least possible that all the genera with a segmented male fore tarsus may have evolved independently in this way, and therefore I cannot regard this character in the Lycaenidae as one of fundamental significance.

Clench (1955) seems to have attached great importance to characters of the legs. I agree with him that the absence of the paired spurs at the lower end of the mid- and hind-tibiae are an important diagnostic character of Liphyrinae, Miletinae, Lipteninae and Poritiinae; in the latter subfamily their place seems usually to be taken by a semicircle of five terminal spinelets. In the other subfamilies it seems that tibial spurs are always present, though they may be aborted and impossible to see without descaling the tibiae, for example in some Curetinae and in the

Thecline genus *Eumaeus*. But I think that Clench attached too much importance to characters of the aborted male fore tarsus, in particular to details of spining on its inner surface. However it is perhaps worth mentioning that in *Amblypodia* and *Iraota* the male fore tarsus is spined on its outer as well as on its inner surface, a character which I have not noted elsewhere and which helps to confirm the relationship of these two rather dissimilar looking genera. The type of ending of the aborted male fore tarsus, basically described by Clench as 'stubby-tipped' or 'produced to a ventrally curved point or hook' is sometimes a useful character, for example it is a stubby-tipped in Lipteninae, Poritiinae and in the Thecline tribes Eumaeini, Amblypodiini and Arhopalini (except in *Semanga*), whilst it tapers to a point in Curetinae, in the Thecline tribes Deudorigini, Hypolycaenini, Tomarini, Oxylidini, Hypotheclini, Catapaecilmatini and Aphnaeini (but rather blunt in *Aphnaeus*), in Lycaeninae and in the Polyommatine tribes Lycaenesthini, Niphandini and Polyommatini. But in Miletinae (when not segmented and functional) and the other tribes of Theclinae and Polyommatinae it is either intermediate in character or very variable, for example showing a range of characters between the two extremes in Theclini (see Shirôzu & Yamamoto, 1956). I also do not attach as much importance as Clench to the presence or absence of an endodont within the tarsal claw. Admittedly its strong development is a good character of Aphnaeini (as also of the family Pieridae). But in the remaining Lycaenidae it is at best an imprecise character, being often indicated by a slight thickening of the basal part of the claw. Nor do I attach much importance to the general shape of the legs nor to the relative lengths of the various joints. The tribe Miletini shows more strikingly than any other how greatly the shape of the legs may vary amongst closely related genera. In a few instances a joint may end in some form of projection. In Curetinae, as pointed out by Ehrlich (1958), the coxa of the fore leg is produced slightly below its articulation with the trochanter; the same feature occurs in a more pronounced degree in Riodinidae. The rather isolated genus *Tomares* bears long, pointed, chitinous projections at the end of the tibia, and I consider these to be a good diagnostic character of the monotypic tribe Tomarini, even though rather similar, though considerably smaller, projections occur in some genera of Aphnaeini.

All the Lycaenidae, except Pentilini, have a characteristic middle leg in both sexes. The inner side of the upper end of the tibia has a trough clothed with small (?specialized) scales and partly bordered by a brush of long, narrow scales, which appears to be associated with a blunt, inverted fan of elongated scales near the lower end of the femur. In Pentilini these features are very weakly developed or absent, so that the middle leg resembles that limb in Riodinidae.

Characters of the Wings

(a) *Wing shape*. Most of the striking abnormalities seem to be of no more than generic value, for example the saw-toothed fore wing costa in *Mimacraea*, the deeply incised hind wing tornus in *Arcas* or the false tornus in *Acupicta* gen. n. (p. 451, Text-fig. 47A). The absence of a hind wing tornal lobe is a character of Lipteninae, Poritiinae, Miletinae and Polyommatinae (except that a vestigial lobe is present in the *Uranothauma* and *Callictita* sections and in some species of the *Cacyreus* section), but in the other subfamilies its presence or absence is of little significance. The absence of hind wing tails is a fundamental character of Liptenninae, Poritiinae, Liphyrinae, Miletinae and Curetinae, whilst the presence of one or more tails, although inconstant, is an equally important character of Theclinae, Lycaeninae and Polyommatinae. In Theclinae the tails or teeth, up to four in number, give very important tribal characters depending on which tail or tooth is dominant. I define as a dominant tail one which occurs only at one vein ending, or one which is longer or, if slightly shorter, then stouter (as in some Iolaini) than any other tail, or, applicable only in *Iraota* (Amblypodiini), one which alone is present in all the species of a genus, though it may not be the longest in species with two or more tails. A tail at vein 1b is dominant in Iolaini, Aphnaeini, Hypolycaenini and Amblypodiini, whilst the tail at vein 2 is dominant in all the other tribes except Ogyrini and Luciini, which are somewhat anomalous. Both these tribes are usually tailless but with the hind wing termen toothed or crenulate, especially in Ogyrini, and with the longest and broadest tooth or crenulation at vein 2. However, in a few species of Ogyrini there is a longer, though narrower tooth or tail at veins 1b or 3 or even at vein 4 in the female, whilst in the *Hypochrysops* section of Luciini there is a longer tooth at vein 3 in the type-species of *Hypochrysops*, *H. polycletus* (L.). In Cheritrini, Catapaecilmatini and Zesiini there is nearly always a tail or strong tooth at vein 1b and there is never a tail or tooth at vein 3 unless the former is also present, whereas in the remaining tribes in which the tail at vein 2 is dominant (except in *Thaduka*: Arhopalini) there is no tail at vein 1b even though there may be tails at vein 3 and even at vein 4. Very frequently the tails are longer or more numerous in the female than in the male. This applies especially commonly in Eumaeini, the most extreme case being *Micandra*, in which the male has a tailless and uniformly rounded hind wing, whilst the female, long thought be to a separate species, has the hind wing strongly lobed and bearing two tails. In Lycaeninae there is at most a single tail at vein 2, and the same applies to Polyommatini, the remaining tribes of Polyommatinae being always tailless though in Lycaenesthini the hind wing cilia are usually prolonged at veins 1b, 2 and 3 to give a false impression of three short tails.

(b) *Venation.* The wide use in the past of venation as the primary character has led to many errors in classification. Nevertheless venation remains a character of some importance provided due allowance is made for individual variation, which is probably quite widespread in all groups. Stempffer (1967 : 215) refers to it in Lycaenesthini, whilst I have found it particularly marked in Miletini and in the Thecline tribes Cheritrini, Catapaecilmatini and Iolaini. Abnormalities of fore wing veins 12, 11 and 10, often including anastomosis or contact of veins 11 and 12, are a character of Poritiinae, are frequent in Polyommatini where they usually give good section characters, and occur not very rarely in the *Epitola* section of Liptenini and in Lycaenesthini. Such abnormalities do not occur in Theclinae, except in *Jacoona* (Iolaini) and in *Sithon*, *Chloroselas* and *Kopelates* (Deudorigini), nor in the Polyommatine tribes Candalidini and Niphandini, nor in Lycaeninae, Curetinae, Liphyrinae and Miletinae. The presence of all twelve fore wing veins is constant in Liphyrinae, is usual in Lipteninae and occurs also in *Deramas* and *Zarona* (Poritiinae) and in a few genera of Theclinae, where it may be confined to the male sex and appears to be of limited classificatory significance. The reduction of the fore wing veins to ten occurs in many widely separated genera of Theclinae, but is a constant character of Eumaeini, Hypolycaenini, Oxylidini, Hypotheclini, Catapaecilmatini and Horagini. The ending of fore wing vein 7 on the termen when only eleven veins are present is a character of Curetinae which occurs only very rarely in other groups, for example, in *Jacoona* and females of *Amblypodia* (Theclinae). Within Theclinae the points of origin of fore wing veins 6 and 7 sometimes give helpful characters and the same may be said of veins 5 and 6 when they arise close together. The presence of a hind wing precostal vein is a fundamental character of Pentilini and of the *Durbania* section of Liptenini, and occurs also in *Megalopalpus*, which represents the Ethiopian element in Miletini. In Poritiinae there are indications of a precostal vein which, at its maximum development, comprises a short, broad but rather ill-defined tooth arising from the basal curve of vein 8; but in some species these indications are confined to a mere change in the thickness of vein 8 at this point.

(c) *Pattern.* Within the family there is a standard pattern which has been analysed by Schwanwitsch (1949). It consists of the following markings on the under surface of both wings, the terms used by Schwanwitsch being placed in brackets: a fine marginal line (first externa); a double series of submarginal markings, the outer often macular, the inner often lunulate or linear (second and third externa); a postdiscal macular, linear, catenulate or banded series (first media); a bar or spot at end cell astride the discocellular vein (first discalis); a series passing through the outer half of the cell (second media); and a subbasal series (second discalis). The markings internal to the end cell bar are often absent or distorted, and the other markings give more important and easily used characters. Suppression of any of them does not appear to be of importance, but any drastic distortion of pattern or the addition of further markings are unusual features suggestive of divertent development. The fact that the family pattern is often unrecognizable or strongly modified in Lipteninae, and to a lesser extent in Liphyrinae and Poritiinae, is a fairly good character of these subfamilies suggesting that they branched off the main trunk of the family tree at an early date. Within the other subfamilies the standard pattern is nearly always readily apparent though there are some notable exceptions, for example in *Iraota* (Amblypodiini). A tendency towards the suppression of all markings on the under surface in quite well separated genera of Papuan or Australian origin, namely *Philiris*, *Parachrysops* and *Titea* (Theclinae), in some Candalidini, and in *Parelodina*, *Vaga* and *Famegana* (Polyommatini), appears to be an example of convergence of little classificatory significance. Mimicry of the standard Batesian type occurs in some genera of Lipteninae, for example in *Mimacraea* and *Mimeresia*. Mimicry in a more general sense may explain certain similarities which occur in various not very closely related genera. For example, in the Oriental Region a number of Thecline genera in the tribes Cheritrini, Loxurini, Iolaini, Hypolycaenini and Deudorigini have brown females with the hind wing bearing a large white tornal area against which the 'false head', formed by a large black tornal spot in space 2 and a long tail, stands out very prominently. This accentuation of the 'false head' probably has protective value. If one can speak of a model in a case like this, then the species of Cheritrini, in which sexual dimorphism is less marked than in the other tribes and which I believe to be of wholly S.E. Asian origin, are probably the models—or at least the group in which this pattern originally evolved. More perplexing is the occurrence in a number of well separated Papuan genera or species of an aberrant pattern, in which the under surfaces of the wings are white with broad fuscous costal and marginal borders usually ornamented with prominent streaks or lunules of metallic silvery-green, whilst on the upper surface there are usually broad white discal bands or patches. This pattern is characteristic of the *Danis* section of Polyommatini (except for the curious and equally aberrantly marked little species *Psychonotis purpurea* (H. H. Druce) **comb. n.,** which is known only from the Loyalty Is) and occurs also in Polyommatini in several species of the *Jamides* section and in *Caleta mindarus* (Felder) and in Theclinae in *Waigeum* (*Hypochrysops* section of Luciini), in *Hypolycaena danis* (Felder) (Hypolycaenini), in *Hypochlorosis* (Hypotheclini), and in *Arhopala critala* (Felder) **comb. n.** and *A. florinda* (Grose Smith) **comb. n.** This striking and distinctive pattern suggests warning colours and mimicry, in which case the numerous and common species of the *Danis* section are presumably the models and the remainder the mimics. If this is correct, the *Danis* section would appear to be the only distasteful group among the Lycaenidae, although Doherty (1889) has suggested rather unconvincingly that some other Oriental species may be protected because of their brilliant colouring.

(d) *Colour.* Appears to be of very little significance.

Male Secondary Sexual Characters

A curious feature of these characters is that they may be present or absent in closely related genera and species. Indeed, in a few species of Cheritrini their presence seems to be a matter of individual variation. This inconstancy, however, does not detract greatly from their value as important and often clear-cut taxonomic characters at subfamily, tribe and section level, whilst in some groups their constant absence may be of equal significance. In the larger tribes there is often a 'standard character' which occurs in the majority of the included genera and species and which, if present, enables one to place an unidentified species into its correct tribe without further ado. These standard characters must be of ancient origin, possibly coinciding with, or closely following, the initial branching off of the ancestral stock.

Unfortunately it is not possible to study the component scales of the varied brands and hair brushes in any detail under an ocular microscope; indeed the limited study which Vane-Wright has so kindly undertaken on my behalf, using the scanning electron microscope, has shown that the ocular microscope may give a totally misleading impression of the structure of the scales. The most striking example is provided by the battledore androconia of the Polyommatini (discussed in more detail on pp. 405–406). Every observer so far has seen and figured apparent 'nodules' of indeterminate shape (it alters at every touch of the focusing screw) placed along the ribs, as in Text-figs 139–145 etc. But under the scanning electron microscope these nodules are proved to be an optical delusion, no doubt due to some interference factor. Not only are the nodules non-existent, but the trabeculae are seen to be much less conspicuous than usual (Pl. 5, figs 28, 30). It seems that the outer lamina gets easily torn, as in fig. 28, but such rents do not seem to have any connection with the appearance of the nodules. Another example of an optical delusion occurs in the purple top scales of all the species of *Catapaecilma*, but in no other purple species that I have examined; it comprises the appearance of rather blurred, wavy transverse lines, as in Text-fig. 124C. Under the scanning electron microscope (Pl. 3, fig. 14) nothing is seen which could explain these lines, which can have no connection with the 'pepper-pot' appearance of the outer lamina in the spaces between the trabeculae, since the pepper-pot character seems to be standard in blue and purple structural scales of Polyommatinae as well as of Theclinae. Vane-Wright tells me that he has not so far encountered 'pepper-pot' scales, whose internal structure is clearly shown in Pl. 4, fig. 19, in any other group of butterflies. It was thought that they might occur in Riodinidae, but three blue Riodinids specially examined for the character proved to have scales of a completely different type somewhat resembling those of *Morpho*. It is possible, therefore, that pepper-pot scales may prove to be a good character of Lycaenidae or even of the Theclinae/Lycaeninae/Polyommatinae branch of the family.[3]

The scanning electron microscope has shown that there is a great range of differences in detail in both ordinary and specialized scales, but unfortunately it cannot indicate whether they have scent or other chemical properties; but assumed scent scales often have anastomosing ribs, as in Pl. 2, fig. 11. A detailed study under the scanning electron microscope of the structure of the scales would be a worthwhile task, but very time-consuming and expensive and far outside the bounds of a preliminary study such as mine. Meantime the distinction between scent and ordinary scales must in many cases remain a matter of guesswork.

Secondary sexual characters provide particularly useful characters in Theclinae and Polyommatinae, and I therefore deal with these subfamilies first.

Theclinae are characterized by the frequent occurrence of so-called brands on the wings. These are broadly of two types:—

(a) contrasting patches formed in a variety of ways from apparently normal or only slightly modified scales,

(b) compact patches of specialized scales which are often associated with 'hair brushes'.

I call the first type 'visual brands' since, although their function is not known with certainty, I cannot conceive what purpose they can fulfill other than visual recognition of the male by the female of the species. They occur sporadically in most of the Thecline tribes, so that their use in classification is limited; they also occur rarely in some other subfamilies (see below). The simplest way in which they may be formed is by a group of contrastingly coloured scales, as in the hind wing brand of *Dapidodigma*. Sometimes the component scales are inserted into the wing sockets at a more oblique angle than the surrounding scales so that they reflect light differently. Sometimes the component scales have their edges rolled inwards. More frequently the brand is due to increased opacity, and such brands can be easily detected by holding the insect against a strong light. Opaque brands may be due to an increase in density of the normal top layer of scales, or additional, usually fuscous, scales may be intermixed with them, as in *Ritra* (Cheritrini), but more often the upper layer of scales is uniform whilst the underlying and invisible layer of fuscous scales has a greater density, as in the *Arhopala atosia* (Hewitson) species-group. The latter type of opaque brand may appear as no more than a very faint shadow on the wing.

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[3] Sellier (1971*a*) has shown that the copper scales of *Lycaena dispar* (Haworth) (Lycaeninae) and the green scales from the under surface of *Callophrys rubi* (L.) (Theclinae: Eumaeini) are also of the "pepper-pot" type (*Urania* type of Sellier), thereby providing further evidence that this type of scale may be the sole type of non-pigmentary scale found in Theclinae, Lycaeninae and Polyommatinae. Sellier also figures structural scales of *Apatura ilia* (Schiff.) (Nymphalidae) and *Gonepteryx rhamni* (L.) (Pieridae) of the *Morpho* type found by Vane-Wright in Riodinidae. It is very desirable that the structural scales of the other Lycaenid subfamilies should be examined, as their type should supply evidence of their phylogeny.

In a second paper Sellier (1971*b*) figures some Lycaenid androconia, including scent scales from the fore wing brand of *Strymonidia spini* (Schiff.) (Theclinae: Eumaeini). As might be anticipated, the latter agree closely with those found by Vane-Wright in the Neotropical '*Thecla*' *bitias* (Pl. 1, figs 4, 5), of the same tribe, but were clothed with a waxy-looking exudation (presumably the dried secretion of the underlying gland) which could be removed by the application of acetic acid.

The second type of brand, in which the scales differ from ordinary scales in shape or size, I term 'scent brands'. When occurring on the hind wing in conjunction with a forward (upward) pointing hair brush on the fore wing dorsum they were termed 'androtheca' by Murray (1935 : 18), who suggested they might be direction-finding organs used for detecting female scent. I think the more usual explanation that they are themselves scent diffusing organs is far more likely to be correct. The size and shape of the scent scales and the position of any associated hair brush are of primary importance.

More often than not brands are composed of only one type of scale, and there is not much difficulty in deciding for oneself whether they are visual or scent brands. But in the Eumaeini the brands are often very complex. The standard tribal character consists of a brand at the apex of the fore wing cell. In its simplest form it is composed of a single type of undersized, presumed scent scale. But in the Neotropical species two or more types of scale may be intermixed or, more often, the brand may consist of two or three contiguous patches each composed of scales of a different shape, size or colour. At Text-fig. 122 I give a diagram of a typical three-part brand consisting of a patch of small, round-ended scales (Pl. 1, figs 4, 5), a patch of larger, contrastingly coloured scales (Pl. 1, fig. 6) and a ring of much broader and larger scales set at an oblique angle to the wing surface. I believe that only the small scales are scent scales and that the other two types serve for visual recognition. The scent patch is invariably placed at or just beyond the cell apex and opposite the antennal club which is probably used to assist in scent diffusion. A single Nearctic species, *Satyrium liparops* (Boisduval & Leconte), has an additional scent brand along the outer part of the cubitus and the bases of veins 3 and 4.

In many Eumaeini presumed visual brands are also placed at the fore wing cell apex, and such brands may be very large, as in *Polyniphes dumenilii* (Godart), in which the patch is composed of a mixture of large, round-ended buff and black scales. But sometimes the visual brand is placed on some other part of the wing and beyond the reach of the antennal club, as in the large black patch overlapping the basal half of space 2 in *Arawacus*, thus contributing some negative evidence that only the scent brands have need of an association with the antennal club.

In Eumaeini there is an unusually large number of different types of secondary sexual character, which very often occur with the standard tribal character. In view of the great number of superficially similar species it is hardly surprising that so many characters have evolved to ensure correct recognition between the sexes. The most striking character is the extraordinary ex-curved hump on the fore wing costa of *'Thecla' gibberosa* Hewitson. Another unique character in Lycaenidae, which I entirely overlooked until Clench drew my attention to it, is the possession by *Theritas*, *Pseudolycaena*, *'Thecla' hemon* (Cramer) and other 'Thecla' species of a flat, but deep pouch lined with specialized scales in space 1b on the under surface of the hind wing. The means of scent diffusion from this pouch is a mystery to me, since there are no associated hair brushes (the abdominal hair brushes, referred to on p. 388, could not reach it) nor apparent wing musculature which could evert it; conceivably the antennal club might thrust into it when the wings are closed. In another group of species there is a large, dark patch above the dorsum on the under surface of the fore wing and the hind wing costa may have a prominent hump to cover it; there may also be an apparently associated patch of contrastingly coloured but otherwise ordinary scales on the upper surface of the hind wing. As these fore wing brands, owing to their concealed position, cannot serve any visual purpose, I presume that they must be scent brands. Their component scales are larger than ordinary scales and are of common-place, round-ended shape, but their length and width appear to assist specific distinction. For example, in *'Thecla' cyllarissus* (Herbst) the scales are outsize and of normal width, in *'T'. carteia* Hewitson the scales are the same shape but much smaller, in *'T.' phoster* H. H. Druce the scales are much narrower, whilst in *'T.' strephon* (Fabricius) there is a mixture of narrow and broad scales. The genera *Heterosmaitia* and *Allosmaitia* are unusual for the tribe in possessing tufts on the upper surface of the hind wing possibly associated with brands on the under surface of the fore wing. In the former genus the tuft is in the cell below the origin of vein 7 and is composed of long, cylindrical scales with swollen bases; it appears to be associated with a polished area on the under surface of the fore wing surrounding a small patch of fuscous, but seemingly normal, scales above vein 1. I do not know whether the tuft merely helps to diffuse scent from the fore wing brand or whether it itself both secretes and diffuses scent: but in view of the very abnormal shape of its component scales I think the latter is the more likely alternative. In *Allosmaitia* the hind wing bears a normal erectile hair tuft at the base of vein 7 which appears to be associated with, though it does not lie exactly opposite, a bare and slightly swollen portion of vein 1 on the under surface of the fore wing surrounded by a brand of small, pale buff scales with their ends crenulate or concave. In this case I feel moderately sure that the fore wing brand secretes scent and that the hind wing tuft exists merely to diffuse it. In *Trichonis* there is a large brand on the upper surface of the hind wing associated with an equally large brand on the under surface of the fore wing. In both brands the specialized scales, which I assume to be scent scales, are similar and about the same size as ordinary scales. In *T. theanus* (Cramer) (Text-fig. 128) they are reddish brown and taper towards the apex (some scales being almost pointed), whilst in *T. immaculata* Lathy they are pale buff, shorter and rounded. In *Micandra* (Text-fig.

127) there is a large brand on the fore wing disc composed of two types of scale. I suspect that the much elongated scale, which is pale blue, may be a scent scale.

In Tomarini a small scent patch may be present at the fore wing cell apex, just as in Eumaeini, but the smaller scent scales resemble those of Deudorigini and a second, quite separate scent brand may be present on the fore wing, as in *Tomares ballus* (Fabricius) (Text-fig. 131). Moreover the relatively long antennae and short fore wing cell must preclude scent diffusion by the antennal club.

In Deudorigini the standard character, present in the large majority of the species, comprises a scent brand bearing very small scales (Pl. 1, fig. 2 and Text-fig. 126) on the upper surface of the hind wing about the origin of vein 7, which is almost always associated with an erectile hair brush (Pl. 1, fig. 1) on the under surface of the fore wing dorsum. Additional brands may occur, but never unless the standard character is also present. These often comprise a 'trident mark' of scent scales on the fore wing along the basal portions of veins 2, 3 and 4, as in many *Rapala* species, but compact patches may occur. In a few African species of *Hypokopelates* there is an additional scent brand overlaid by an erectile hair tuft in space 1b on the upper surface of the hind wing. Some species of *Pilodeudorix* are highly aberrant in possessing a scent brand on either side of the abdomen, bearing full-length but rather narrow, round-ended scales and there is a large associated hair brush arising near the base of space 1b on the hind wing. The genus *Sithon* occupies a rather isolated position in the tribe; not only is it alone in possessing only ten fore wing veins, but it also has an additional scent brand on the hind wing just above vein 6 overlaid by an erectile hair tuft arising in the cell and there are further rather prominent, but non-erectile hair tufts near the bases of spaces 1a and 1b on the fore wing and astride vein 2 on the hind wing.

In Hypolycaenini there is no standard character. Scent brands occur in a few of the African species. In *Hypolycaena naara* Hewitson and *H. liara* H. H. Druce there is a compact patch of undersized scales (Pl. 3, fig. 13) at the lower corner of the fore wing cell, which at first sight recalls the standard scent brand of Eumaeini; but it is nearer the base of the wing and not opposite the antennal club, which could hardly be used to diffuse the scent. In *Tatura lebona* (Hewitson) there are two scent brands on the fore wing; these comprise a small patch of rather Deudorigine-like scales at the base of space 2 and also a longish pouch lined with small scales and overlaid by an erectile hair tuft along the basal half of vein 1. In a few Oriental species visual or partly visual brands are found on the fore wing disc. They are most prominent in the '*Hypolycaena*' *phorbas* species group, in which a trident mark of small, bifid- or trifid-ended scales at the base of veins 2, 3 and 4 is surrounded by a large patch of ordinary scales of a deeper shade than the rest of the wing. I suspect that the trident mark may be a scent brand.

In Iolaini both scent and visual brands are very frequent. Usually the presumed scent scales hardly differ in appearance from ordinary scales and are about the same size or larger. The standard character consists of a scent brand on the hind wing (Pl. 2, figs 10–12) concealed beneath a lobe on the fore wing dorsum which bears an erectile hair brush turned up beneath the wing, exactly as in Deudorigini. However the hind wing brand differs from the homogeneous brand of Deudorigini in being ill-defined and merging into a surrounding nacreous area of round-ended scales. A number of modifications or other types occur, often in single species, giving rise to a number of monotypic or very small genera. In *Creon*, as well as the standard character, there is an additional small tuft on the fore wing dorsum composed of enormous, loosely attached, boat-shaped scales (Pl. 2, figs 7, 9). In the type-species of *Iolaus* the usual hind wing brand and surrounding nacreous area are replaced by a black patch which may serve as a visual brand, since the usual concealing lobe of the fore wing dorsum is not developed, whilst there is a small, apparent scent brand on the under surface of the fore wing beneath the usual hair brush. In several genera there are scent brands beneath overlying hair brushes on the upper surface—in *Dacalana* and *Thrix* on the fore wing and in *Manto* and *Hemiolaus* on the hind wing. In *Dacalana* (Text-fig. 136) the scent brand is composed mainly of large scales but some much smaller scales are also included, and both types are unusual for the tribe in having crenulate ends. In *Hemiolaus* (Text-fig. 135), as if to emphasize its intermediate position between the rest of Iolaini and Hypolycaenini, the scent scales are considerably smaller than usual. In a large number of species there are brands on the fore wing disc. These may be purely visual; but in some cases, for example in *Britomartis* and *Jacoona*, they may also incorporate scent scales. In both these genera the brand scales are loosely attached and in *Jacoona* comprise a mixture of normal-sized, round-ended, brown scales and much larger fuscous scales set at an oblique angle to the wing, especially near the edge of the brand where they stand almost upright. In *Purlisa* a hind wing hair fringe is used in conjunction with a scent brand on the abdomen—an arrangement otherwise found in Lycaenidae only in *Pilodeudorix* and in Poritiinae—and the presumed scent scales (Text-fig. 129) are outstandingly large. A still more curious feature occurs in *Sukidion* comprising a prominent two-part hair fringe along almost the whole length of the fore wing dorsum, the shorter whitish part turned down, the longer fuscous part turned upwards beneath the fore wing. As there is no associated scent brand its purpose is conjectural. Could it be a sort of receptor, as visualized by Murray?

In the very small tribe Remelanini secondary sexual characters are present in all but the monotypic genus *Pseudotajuria* gen. n. (p. 451). In *Remelana* there is an indistinct visual brand on the fore wing disc, generally similar to that of the *Hypolycaena phorbas* group (p. 403) but with the trident mark more obscure and composed of weakly contrastingly coloured but otherwise perfectly ordinary scales. In *Ancema* there are hind wing scent brands associated with fore wing hair brushes, as in Iolaini. In the type-species, *A. ctesia* (Hewitson), there are also two large brands on the fore wing, and the scales in all three brands are similar and much smaller than ordinary scales. In *A. blanka* (de Nicéville), a species only provisionally included in *Ancema*, there are no fore wing brands and the scales in the hind wing brand are larger and do not seem to differ from those of Iolaini. In general the secondary sexual characters of Remelanini corroborate other characters in suggesting that the tribe occupies a position linking Iolaini and Hypolycaenini.

In Cheritrini, Horagini and Loxurini, three tribes which seem to be rather closely related, a variety of scent and visual brands occur. The scent scales, though variable in shape, are about as large as ordinary scales. The position of the scent brands is also variable, for example in a long pit on the hind wing in *Yasoda* (Loxurini), on the under surface of the fore wing in *Thamala* (Loxurini) and *Horaga* (Horagini), and on the hind wing at the base of vein 7 but associated with a further brand on the under surface of the fore wing in *Drupadia*. In the *Drina* section of Loxurini the scent scales differ much from those of the rest of Theclinae and the brands are on the upper surface of the fore wing, either as a concentrated discal patch, as in *Drina discophora* (Felder) (Text-fig. 130), or in the form of streaks along and between the veins, as in *D. maneia* (Hewitson). In the first-named species the brand is composed of a mixture of scent scales and narrow plume scales; in the latter only the scent scales are present. Both types of brand show an astonishing and inexplicable similarity to the brands found in the *Uranothauma* section of Polyommatini. Hair brushes on the fore wing dorsum never occur in any of these tribes, but there is a small erectile hair-tuft on the hind wing in *Cheritra*. In some species scent diffusion may occur through friction when the males indulge in the characteristic Lycaenid habit of moving the hind wings alternately up and down when settled.

In Catapaecilmatini the typical species have the basal portion of vein 1 of the fore wing slightly swollen and densely clothed with small scales resembling the scent scales of Deudorigini and the same scales occur along some of the other veins. In *C. major* H. H. Druce and *C. lila* Eliot the corresponding part of vein 1 is sparsely clothed with short wavy hair scales, (Pl. 3, figs 15, 16), but there are no androconia on the other fore wing veins.

In Amblypodiini the genera *Iraota* and, to a lesser extent, *Myrina* have the hair scales along the fore wing dorsum and on the hind wing more developed than usual. The development is particularly strong in *Iraota rochana* (Horsfield) and the fore wing hairs have become a fairly well formed tuft approaching the hair brush found in Deudorigini, Iolaini and Remelanini. The subbasal area of the hind wing bears somewhat polished but barely modified scales which do not give the impression of being scent scales. In addition, in both genera, the groove in space 1b of the hind wing is rather densely overlaid by hairs, though the underlying fuscous scales appear to be quite normal. I doubt if any of these features amount to a scent diffusion apparatus, but it seems just possible that they represent scent organs either in the early stages of evolution or else in the later stages of degeneration.

In the remaining tribes of Theclinae secondary sexual characters do not occur except for the rare presence of visual brands in Arhopalini.

In Polyommatinae the androconia, using the term in a wide sense to indicate any type of scale not found in the female, play an important part in the separation of the four tribes. In Polyommatini, leaving aside the *Uranothauma* and *Callictita* sections, which I deal with separately, since their secondary sexual characters are quite different to those of the rest of the tribe, the androconia are of three main and two subsidiary types:-

(a) *Battledore scales* (Pl. 5, figs 25–30 and Text-figs 139, etc). These well-known scales have a variable number of ribs, usually parallel but sometimes converging like the ribs of an open fan, which usually appear to bear separate nodules (p. 399).

They are known to be scent scales. They are present in at least some species of each section except for the *Una*, *Zizula*, *Pithecops* and *Cupidopsis* sections, which contain so few species that their absence may not be of taxonomic significance, and the *Lampides* section which bears modified androconia described below as 'long flask scales'. The battledore scales usually provide good characters at the genus and species-group level, and sometimes at section level also, but they may exhibit quite marked individual variation and are often strongly asymmetrical. They are inserted in the wings in alternate rows with ordinary scales, frequently in a one-for-one or slightly higher ratio, but may be much sparser than the latter; indeed, in some species in which they are always sparse, such as *Zizeeria maha* (Kollar), examples may occur in which they are entirely lacking. They are commonest in blue or purple species, but also occur in a number of brown species. The length of their pedicel is roughly in inverse ratio to the length of the lamina, since the combined length pedicel + lamina must be sufficient to enable them to protrude beyond the overlying ordinary scales. Usually the lamina tapers into the pedicel which is widest at the top and integral with the lamina. However, in two genera, *Catochrysops* (Text-fig. 140) and *Rysops* gen. n. (p. 452 and Text-fig. 139), the pedicel tapers to a point at its apex and is very lightly attached to the rather rectangular lamina; and, particularly in the latter genus, care has to be taken in extracting the androconia or the pedicel is left behind and the extracted scale, having no trace of a pedicel, appears to be unstalked. This peculiarity, combined with their similar external appearance and pattern, obliges me to unite these two genera in the *Catochrysops* section despite differences in the male genitalia and venation. Except in the *Zizeeria* section (Text-figs 141–143), *Actizera* section (Text-fig. 144) and in *Itylos* (Text-fig. 145) the apex of the scale is convex. In the first two sections the scales are rather large, with a flat base, parallel sides and a concave or flat apex, and the fact that those of *Actizera* are virtually indistinguishable from those of *Zizeeria* suggests that Chapman (1910) may have been correct in associating these two genera in his 'subfamily' Zizeeriinae and that Stempffer (1967 : 275) was incorrect in thinking that they have no close relationship. In *Theclinesthes* (Text-fig. 159) and some *Nacaduba* species the scales may be wider at bottom than at top. In *Pseudonacaduba* (Text-fig. 152), *Upolampes* (Text-fig. 151) and *Azanus* (Text-fig. 146) the base of the lamina is concave, as in ordinary scale, and in the first two genera the scales are virtually indistinguishable. I do not think that this necessarily indicates that these three genera are closely related, but rather that evolution of the battledore character from that of the normal scale has proceeded less far. On other grounds the three genera certainly do not seem to be closely related.

(b) *Paddle scales* (Text-figs 148, 149). These have a hybrid appearance between long plume scales (see below) and battledore scales, and as they never occur in association with the latter they are probably modified battledore scales. They occur, so far as I know, only in a few species of four not specially closely related genera: *Azanus*, *Jamides*, *Erysichton* and *Petrelaea*. Their arrangement on the wing is similar to that of the battledore scales, but they may be far more numerous, so as to hide the ordinary scales, as in the *Azanus ubaldus* (Cramer) species-group.

(c) *Long flask scales* (Text-fig. 161). These occur only in *Lampides* and serve to emphasize the rather isolated position of this monobasic genus. I presume that they also are modified battledore scales.

(d) *Long plume scales* (Pl. 5, figs 25, 26). These have sometimes been referred to as hair scales or Haarschuppen, but as they are not circular in section this is a misleading name bound to lead to confusion with true hair scales always present on the wings of both sexes. They occur in a very great number of species in addition to battledore scales, and for this reason I assume that they are highly modified ordinary scales without scent properties. They may be scattered sparsely over the wing, or be gathered in patches at a sufficient density to give the area a shadowy look, as in *Lampides boeticus* (L.), or be gathered in dense raised patches, as in *Agrodiaetus ripartii* (Freyer). In the latter species the scales are particularly long and the patch looks as though it ought to have scent diffusion properties, but as the brown wings also bear large numbers of ordinary battledore scales it is probable that it is only a visual brand.

(e) *Gelbe Schuppe* (Text-fig. 150B). This type of scale, discovered by Courvoisier (1916) and so named by him in a very important paper on Lycaenid androconia, appear to be confined to the *Polyommatus* section; at any rate Courvoisier did not record them, nor have I encountered them, in any other section. They are rather intermediate in appearance between ordinary and battledore scales, and their function is unknown.

In the *Uranothauma* and *Callictita* sections androconia of types not found in the other sections occur. Most species bear dense patches or streaks on the fore wing composed of specialized hair scales, often in association with short plume scales (Text-fig. 162). I am uncertain whether one or both types of scale have special properties but as some species only bear hair scales it seems likely that these are scent scales. Species bearing these highly specialized brands never bear battledore scales, but the species *U. antinorii* Oberthür appears to link the *Uranothauma* section to the remainder of the tribe. It bears androconia (Text-fig. 157) rather intermediate in appearance between short plume scales and battledore scales which are about the same length as ordinary scales. They are not arranged in brands, but are found in alternate rows with the ordinary scales in exactly the same manner as battledore scales except that they are present in far greater numbers. I think that they are undoubtedly scent scales.

In Niphandini (Pl. 4, figs 20–22 and Text-fig. 160) very curious, flask-shaped and 'hieroglyphically marked' androconia occur in most species in alternate rows with the ordinary scales, as with the battledore scales of Polyommatini. The usual ribs and trabeculae are completely distorted, and no two scales are patterned alike. The pedicel is minute and set at right angles below the base of the scale, so that an extracted scale appears to be unstalked. The unique character of these scales emphasize the isolated position of *Niphanda*.

In Candalidini dagger scales (Pl. 4, figs. 23, 24 and Text-fig. 156), so-called because Haase (1888 : 317), who first drew attention to them, described their shape as 'dolchförmig', are the only type of androconia. They are slightly shorter than ordinary scales and taper evenly to their bases, and the lamina bears fine ribs without any suggestion of nodules. They are frequently gathered into a dense 'trident mark' on the fore wing disc, but may be spread over the wing surfaces, usually at a much higher rate than one androconial per ordinary scale.

I have examined many species of African and Oriental Lycaenesthini without finding any androconia other than long plume scales. However battledore scales have been reported by several authors. Bethune-Baker (1910), writing of the African species, says: 'the scales of the wings present no points that call for special attention except for the fact that the *long* (my italics) battledore scales are very few in number'. Fruhstorfer (in Seitz, 1924) says of the Oriental species that the battledore scales of *Lycaenesthes lycaenina* (Felder) are elliptical, like those of *Chilades*, whilst those of *L. philo* (Hopffer) are leaf-like, like those of the *elpis*-group of *Jamides*, but I have failed to find any in either species. Courvoisier (op. cit.) claims to have found them in all the Oriental species but in only one African species, *Anthene amarah* (Guérin). His figures, in size, shape and pattern of the ribs, appear to represent ordinary blue or purple top scales, which in this tribe often have relatively few and stout ribs. For example, I have found ordinary purple scales of the African *A. liodes* (Hewitson) (Pl. 3, figs 17, 18) with as few as seven stout ribs. For my part, until I have actually seen them, I remain quite unconvinced of the existence of battledore scales in Lycaenesthini, and I consider that their absence is one of the important diagnostic characters of the tribe.

In Lipteninae secondary sexual characters are always confined to the fore wing. The majority of the species have the fore wing veins more or less swollen at their bases, sometimes in both sexes but always to a more pronounced degree in the male. The latter usually have the veins clothed, sometimes thickly, sometimes sparsely, with small, round-ended scales which are often intermixed with, or underlie, the ordinary scales and extend nearly throughout the whole length of the veins. The size of these scales may vary greatly in any one individual, and it is hard to know whether they should be regarded as androconia or not. In the case of those genera and species, for example *Phytala elais* Westwood, in which the thickened portion of the veins is short and stout and the small scales are gathered into dense homogeneous brands I assume the scales are scent scales. In a few genera the fore wing may bear a long hair fringe just below vein 1, whose only function would seem to be to assist in scent diffusion from the specialized scales lying along vein 1. In *Aethiopana honorius* (Fabricius) (Text-fig. 138) the specialized scales on vein 1, lying above a hair fringe, are much longer than ordinary scales, but the specialized scales clothing the other veins are of the usual small type. In *Hewitsonia* the base of vein 1 is swollen and clothed with short wavy hair scales (Pl. 6, figs 33, 34), showing in this character an astonishing resemblance to *Catapaecilma major* (p. 405), space 1a bears a rather dense cover of exceptionally long and wavy hairs and the other fore wing veins bear the usual small scales.

In Poritiinae the secondary sexual characters are always confined to the hind wing or abdomen. There are one or two hind wing brands clothed with very small scent scales (Text-fig. 137E) and usually provided with overlying hair brushes.

In *Poritia*, as already mentioned, there is a brand on the abdomen with an associated hair brush on the hind wing. The scales in this brand (Text-fig. 137 A, B, C) are of two types, the long scale probably being the scent scale.

In Liphyrinae the *Liphyra* section lacks secondary sexual characters, but in all but one of the species of the *Aslauga* section there is a small scent brand on the upper surface of the hind wing comprising a strip of small specialized scales overlying a short, slightly swollen, subbasal portion of vein 7. Under an ocular microscope these scales (Text-fig. 133) give the impression of having a granular surface with faint radiating ribs, but under the scanning electron microscope they are seen to have normal parallel ribs. In *Aslauga pandora* H. H. Druce (a species probably misplaced in this genus) there is a very large brand on the hind wing clothed with long but rather narrow scales, which I assume to be visual scales.

In Miletinae, the males of most of the species of Miletini have the basal portion of vein 4 thickened and bearing a sparse covering of very small scales (Pl. 6, figs 31, 32 and Text-fig. 134), and in some species this nearly bare portion is surrounded by a visual brand of contrastingly coloured ordinary scales. The small scales, which I assume to be scent scales, are weakly attached, and in worn specimens it is often found that all have become detached, but their empty sockets testify to their original presence. In some species the extent, and even the existence, of the nearly bare portion is a matter of subspecific variation. The remainder of the subfamily lack secondary sexual characters except that in *Thestor* there may be a visual brand of contrastingly coloured scales on the fore wing.

In Curetinae there are no secondary sexual characters, nor have I found any in Lycaeninae.

Early Stages

Although the early stages of the majority of Lycaenidae are still unknown, sufficient information has been put on record to give considerable assistance in classification. The following résumé of recorded observations appears to support my proposed classification at the subfamily and, often, at the tribal level.

More information has been recorded about larvae in their later instars, to which my remarks about larvae are confined, than about the other immature stages. As, however, larvae must be subject to a greater variety of external factors favouring differential adaptations than the egg or pupa, the later larval instars must have limited value in classification. Bell (1915–1920), whose experience of breeding Oriental butterflies remains unrivalled, thought that the pupal stage was more likely to give sound classificatory characters than any other. As long as ago 1889, Doherty attempted a higher classification of the Oriental Lycaenidae based solely on the egg, whilst more recently Clark & Dickson (1956*a*), in a very important paper, used the egg and first larval instar for their classification of the South African Lycaenidae from the early stages.

Little seems to have been recorded about the eggs of Lipteninae. Clark & Dickson (op. cit.) figure the egg of *Durbania* of a most unusual truncated pyramid shape, and also those of some Pentilini shaped like a truncated dome. The egg of *Mimacraea*, figured by Stempffer (1957), though shaped more like a depressed sphere, is broadly similar to that of Pentilini. The larvae of Lipteninae resemble those of the moth families Lymantriidae and Lithosiidae, and differ widely from those of the rest of the family other than Poritiinae. In particular the head is not much narrower than the body and is barely retractile, whereas the standard Lycaenine larva is characterized by a small retractile head. This difference suggests that the Lipteninae and Poritiinae branch originated at a very early stage in the evolution of the family. The usual larval foods of Lipteninae are lichen and microscopic fungi (Jackson, 1937). The pupae are fastened only by the cremaster, but appear usually to retain the larval skin bunched up around the posterior segments. They may be suspended or stand out rigidly, head uppermost, at an angle of about 45° from the support.[4]

The egg of *Poritia* was described by Doherty (1889) as hexagonal and quite unlike any other egg he knew. It appears to resemble the egg of *Durbania* more closely than any other. Rosier (1951) described the larva of *Poritia erycinoides* (Felder) as long and thin (20 mm × 3 mm when full-grown), rather square in section, barely tapered at either end and with a thick covering of short white hairs arranged in stellate bundles on the back and in 'bushes' on the sides, and with longer, sparser greyish white hairs projecting laterally. It appears to resemble the Liptenine larva quite closely. It feeds on *Castanea* and apparently is processionary in habit, a feature which appears to be unique in the family, though simple gregariousness has been recorded in several widely separated groups. The pupa is fastened by the cremaster without a girdle, and the abdomen is bent through a right angle so that the main part of the pupa hangs parallel to its support. Rosier does not mention whether the larval skin is discarded or retained, so one must presume the former in the case of this species. But it is of interest, and possibly of taxonomic significance, that de Nicéville (1890 : 9) records a remarkable similarity between the pupae of *Durbania amakosa* Trimen and an unnamed Indian *Poritia* species, both having the posterior end especially densely covered with very long hairs. It seems highly probable that in each case the observer mistook the undiscarded, bunched-up larval skin for an integral part of the pupa.

In Liphyrinae the egg of *Liphyra* is shaped like a 'drum or section of a Doric column' (Doherty, op. cit.) or 'cheese' (Waterhouse, 1932), and is higher than wide. The egg of *Aslauga* appears to be rather dissimilar, being 'small, white, oval and with a slight central depression' (Jackson, 1937). All known Liphyrine larvae possess a tough leathery cuticle which extends in a wide, skirt-like carapace to the substrate, so that the larvae somewhat resemble limpets. All live in close association with ants and have a wholly aphytophagous diet. The larva of *Liphyra* lives as an unwelcome guest in the nests of the large and ferocious tree-ant *Oecophylla*, devouring the ant larvae and pupating wholly within the larval skin inside the ants' nest, from which the imago is able to escape by its possession of a dense covering of specialized and discardable scales in which attacking ants become entangled. On the other hand *Euliphyra*, which also lives in the nests of *Oecophylla*, is tolerated by the ants, which feed its larva with regurgitated food (presumably the secretions of Homoptera) even though it contributes nothing to the ant economy, and the pupa, though it does not entirely discard the larval skin, does not derive nor need protection from it (Lamborn, 1914). The larva of *Aslauga* feeds on coccids farmed by ants, which do not interfere with it, and the pupa, which has a completely flat under surface and bears chitinanths (chitinous flower-like outgrowths) on top and sides, is attached only by the cremaster whilst the larval skin is entirely discarded (Bethune-Baker, 1925).

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[4] After studying the recent book by Clark & Dickson (1971) and consulting Dickson, it is clear that some of the information given above concerning the early stages of Lipteninae is incorrect. Dickson (pers. comm.) tells me that the egg of *Durbania* is circular in plan view, though rather peculiarly shaped when viewed from the side. It is apparent that a large, unretracted head in the adult larva has been found only in the few species of the *Epitola* and *Iridana* sections whose early stages are known (Farquharson, 1922). In the very few known larvae of the *Liptena*, *Mimacraea* and *Durbania* sections the head, though not fully retracted, is not unduly large; while in the *Pentila* section the only known *Pentila* larva has a small, fully retracted head (Jackson, 1937), and it is evident that the larva of *Alaena* is similar (Clark & Dickson, 1971: pl. 110).

It might be thought that the tough carapace of the larvae of Liphyrinae had evolved through association with hostile ants. Special protection is certainly needed by *Liphyra;* on the other hand the larvae of *Euliphyra* and *Aslauga* do not appear to need any greater protection from ants than do larvae of other subfamilies which live as more or less unwelcome guests amidst ant communities, for example the larvae of Miletini and *Cupidesthes wilsoni* Talbot (Lycaenesthini), for which a leathery cuticle without skirt-like carapace suffices. It therefore seems probable that the carapace is not a recent adaptation but an ancient feature which evolved in the original Liphyrine ancestor and is thus of diagnostic significance. The peculiar pupa of *Liphyra* and the development of discardible scales in its emergent imago are, however, certainly secondary specializations of limited classificatory value.

In Miletinae the egg is of ordinary Polyommatine shape, though often much flattened and disc-like. The egg of *Thestor* is exceptional in having a lobe on its upper surface (Clark & Dickson, 1960). The larvae are of normal onisciform shape and are carnivorous or feed on the secretions of the honey gland of Homoptera. The pupae may recline under stones or in ants' nests (*Thestor*), but when above ground are attached only by the cremaster except that Kershaw (1907) states that in *Miletus chinensis* Felder a girdle is sometimes present. The resemblance of the pupae of *Spalgis* and *Feniseca* to a monkey's head is well known, and those of *Taraka* and *Lachnocnema* are similarly shaped, though less realistically pigmented. Stempffer (1967) suggests that Clench attaches too great a classificatory significance to the carnivorous habits of this subfamily and of *Liphyrinae*, mainly on the grounds of the well-known cannibalistic tendencies of many Lycaenid larvae. However a wholly aphytophagous diet is extremely rare in the other Lycaenid subfamilies—it has been recorded in *Niphanda fusca* (Bremer & Grey) and two *Spindasis* species (Shirôzu, 1962) and may occur in a few brown species of *Pseudodipsas* (Sands, in litt.)—so that its 100% occurrence in Miletinae and Liphyrinae, taken in conjunction with other characters, seems to me to be decisive in supporting their status as subfamilies.

In Curetinae the egg is shaped like a depressed sphere covered with coarse hexagonal reticulations and with a deep central depression at the apex (Bell, op. cit.). The distinctive larva has large, permanently exserted cylinders on the eleventh segment furnished with whip-like, extrusible processes used for scaring away unwanted intruders, and lacks a honey gland. The pupa is almost hemispherical with the ventral surface quite flat and is attached by the cremaster and usually by a girdle also. It has been well figured and its other distinctive features discussed by Shirôzu & Yamamoto (1957).

In Theclinae the egg is usually 'dome-shaped' or shaped like an inverted cup, but occasionally flattened and more resembling an inverted saucer. But sometimes the egg approaches the Polyommatine shape (widest in the middle and with the top flattened or hollowed), for example in a number of Eumaeini, whilst Doherty (op. cit). placed *Catapaecilma* and *Semanga* in his subfamily Lycaeninae (recte Polyommatinae mihi) because of their Polyommatine-like eggs.

The larvae of Theclinae are onisciform (widest and highest in the middle, with the dorsal surface gently convex, like a woodlouse) in a number of tribes, for example Theclini, Arhopalini, Ogyrini, Eumaeini. But this shape is often modified to a greater or lesser extent; for example, in Aphnaeini the larva is rather long and parallel-sided, whilst in Iolaini and some other tribes it is waisted and shouldered (i.e. widest and highest about segments 4 or 5), and may be ornamented with numerous fleshy horns (Horagini) or shorter processes (Cheritrini). The tenth segment nearly always bears a honey gland, and the eleventh segment almost as often bears twin eversible tubercles furnished with spines or flagellae. Bell refers to these tubercles as 'signal towers' used to indicate to attendant ants that the honey gland is ready to be milked, but Clark & Dickson (1956b) state that they are used for 'dusting' and to scare away unwelcome intruders, including ants whose attentions are no longer required. Apparently the larvae of Aphnaeini can always be recognized with certainty by the fact, first pointed out by Bell and confirmed in greater detail by Clark & Dickson, that the whip-like tubercles are sheathed within permanently raised protuberances protected by spines—an arrangement strongly recalling the much longer cylinders of Curetinae. A further peculiarity of Aphnaeini is that the larvae exude liquid from a saucer-like depression, called a 'dew patch' by Clark & Dickson, on one or more abdominal segments in addition to the usual honey gland. Apart from the shape and nature of the tubercles, and the different instars in which they first appear, it seems that the widespread association with ants gives little information of classificatory value. Apart from the very few aphytophagous larvae already mentioned (p. 411) the larvae of Theclinae almost always feed on dicotyledonous angiosperms, at least in their early instars, but some Eumaeini feed on gymnosperms and there are also a very few monocotyledon feeders. The latter include *Sandia* feeding on bear grass (Clench, in litt.), a few *Hypolycaena* and *Chliaria* species on the flowers of orchids, possibly a few species of the *Hypochrysops* section of Luciini on *Smilax*, and all the genera of Loxurini whose life histories are known (*Loxura, Yasoda, Eooxylides*) feeding on *Smilax* and *Dioscorea*. If restriction to monocotyledons should be confirmed in the other genera of Loxurini it could, I think, be regarded as an important diagnostic character of the tribe.

The pupae of Theclinae are varied and possibly of considerable diagnostic importance. In the majority of tribes the last segment of the abdomen is dilated in the form of a horse's hoof, round the under surface of which are fixed the suspensory hooklets. However, Bell states that this feature is obscure in *Catapaecilma* and is absent or weakly developed in the Indian species of Aphnaeini, whilst Clench (in litt.) states it is absent in North American Eumaeini. In those genera in which the larva is onisciform or deviates only a little from this shape the pupae are girdled except sometimes when reclining or sheltered or retaining the larval skin (as in *Thecla*). Girdled pupae are characteristic of Theclini, Eumaeini, Deudorigini, Tomarini, Hypolycaenini, Remelanini, Arhopalini, Ogyrini, Luciini and the *Jalmenus* section of Zesiini. In genera in which the onisciform shape of the larva is much modified, the pupa lacks a girdle; and as long ago as 1900, de Nicéville claimed that in India the genera with girdleless pupae formed a natural group. Girdleless pupae seem to be broadly of two types: standing rigidly with head uppermost, often at an angle from a vertical support; or suspended head downwards with the body arched and capable of hammering the head on the support when alarmed (Jackson, 1937; also Bell (op. cit.), who records a number of Lycaenid pupae from other tribes capable of making a noise either by hammering or by moving the segments over one another). The first type appears to be characteristic of Horagini, Cheritrini and the *Zesius* section of Zesiini. It also occurs in Iolaini, but less commonly than the second type, which also occurs in Loxurini and Catapaecilmatini. The tribe Amblypodiini, which in its adult characters appears to occupy an intermediate position between Arhopalini and Iolaini, is also rather intermediate in its pupal characters. In *Amblypodia* and *Myrina* the pupa is girdleless and may be suspended, but often reclines in a crevice or on the ground among dead leaves, whilst in *Iraota* the pupa is particularly strongly attached at the cremaster yet retains a weak girdle (Bell, op. cit.). In Aphnaeini it appears that the pupa is almost invariably without a girdle (Bell records a girdle only in *Spindasis vulcanus* (Fabricius)), but as the pupae appear to be always enclosed in some form of shelter or reclining on or below ground, sometimes in an ants' nest, its absence is less likely to be of taxonomic significance than in tribes such as Iolaini which always pupate above ground level.

The larva and pupa of *Ancema blanka* (de Nicéville), described by Bell as *Camena argentea*, the only species of Remelanini of which any of the early stages are known, are of interest in helping to establish the closer relationship of this tribe to Hypolycaenini than to Iolaini. The larva is onisciform and the girdled pupa is stout, with the belly flattened to fit the substrate closely, and bears a strong likeness in shape and markings to a monkey's head (this resemblance to the pupae of Spalgini must be coincidental). The only point of resemblance to Iolaini is that the larva feeds on Loranthaceae.

The egg of Lycaeninae, characterized by few and very large indentations, is closer to the Thecline dome shape than to the Polyommatine shape. The larva is onisciform and appears always to lack a honey gland though dew patches may be present, as in Aphnaeini. The food plants are nearly always species of dock (*Rumex*). The pupa is girdled.

The egg of Polyommatinae has been variously described as 'turban shaped', 'mandarin shaped' or 'button shaped'. It is normally widest in the middle with the top flattened or hollowed, but occasionally, as in some species of Lycaenesthini, it shows a slight approach to the Thecline dome shape. The larvae are onisciform and are often ornamented with short protuberances of various shapes. Such ornamentation seems to be of less taxonomic significance than in Theclinae; for example, it seems that there are at least three types of larvae in African *Anthene* (Jackson, op. cit.): perfectly smooth, bearing a single ridge of tent-like processes, double ridged. The larvae, at least in their early instars, feed on dicotyledons except in *Niphanda*, whilst a few species of *Chilades* feed on Cycads as an alternative food plant. The aphytophagous larva of *Niphanda* is abnormal in increasing gradually in width as far as the tenth segment. As in Theclinae, the association with ants is so varied and widespread as to be of little apparent help in classification. The pupae are always girdled except when reclining or sheltered. The Thecline 'horse's hoof', is not developed, except that Bell states it is present 'though not accentuatedly so' in the Oriental species *Lycaenesthes emolus* (Godart). In Candalidini the pupa is distinctive in having the abdomen flattened at the edges and bears a double or single flat projection at the front of the head (Waterhouse, 1932).

SKELETON KEYS TO THE SUBFAMILIES, TRIBES AND SECTIONS

The following keys have been kept as short as possible. Characters peculiar to the group have been put first, complementary characters subsequently. It does not follow that the former type of character is of primary diagnostic significance, but merely that it is convenient for identification and may dispense with the need to use any complementary characters. In the case of Theclinae, Lycaeninae and Polyommatinae there is a dearth of characters peculiar to the subfamilies and I have therefore been obliged to include sufficient complementary characters to enable any species to be placed in its correct position in the classification.

Key to the Subfamilies

1 Mid and hind tibiae without paired terminal spurs 2
– Mid and hind tibiae spurred (but spurs may be very small and difficult to see, e.g. in Curetinae and *Eumaeus* (Theclinae)) 5
2 (1) Male fore tarsus fused to a single, stubby-tipped segment. Male genitalia with saccus, when developed, directed caudad. Anastomosis of veins 11 and 12 or abnormalities of veins 10 and 11 may occur in fore wing . . . 3
– Male fore tarsus segmented and clawed or, if fused to single segment, ending in a down-curved point which may be short and abrupt. Saccus, when developed, directed cephalad. Veins 10, 11 and 12 of fore wing normal and separate. . 4
3 (2) Abdomen bearing sparse tufts of bristles on last 2–5 sternites. External secondary sexual characters, when present, confined to hind wing and abdomen. . . . . **PORITIINAE** (p. 425)
– Abdomen without ventral tufts of bristles. External secondary sexual characters, when present, confined to fore wing. **LIPTENINAE** (p. 422)
4 (2) Fore wing with all 12 veins present. Male secondary sexual characters, when present, confined to hind wing . . . . . **LIPHYRINAE** (p. 425)
– Fore wing with 11 veins. Male secondary sexual characters, when present, confined to fore wing and abdomen. . . . . . **MILETINAE** (p. 426)
5 (1) Antennal shaft bearing sparse fringe of bristles on ventral surface of basal 3–4 segments. Proboscis shaft bearing prominent and regular series of sensillae on sides. Fore wing with 11 veins and vein 7 ending on termen; hind wing tailless. No secondary sexual characters. . . . **CURETINAE** (p. 428)

– Antennal shaft without fringe of bristles. Proboscis smooth-sided, but may bear short sensory hairs on under surface in some genera. In species having 11 or 10 veins, vein 7 ends on costa or at apex, except in tailed genera *Jacoona* and *Amblypodia* (female only). Hind wing often tailed. Secondary sexual characters often present 6

6 (5) Antennal club cylindrical, except in some species with 10 fore wing veins. Hind wing veins often bearing one or more tails which may arise from veins 1b, 2, 3 or 4, and usually with a tornal lobe. Male scent scales gathered into compact brands often with associated hair brushes . ***THECLINAE*** (p.428)

– Antennal club more or less flattened or hollowed beneath, except in most *Niphanda* females. Fore wing with 11 veins (except 10 in *Cupidopsis*). Hind wing never with more than a single tail at vein 2 and not lobed, except in some Lycaeninae and vestigially in some species of *Uranothauma*, *Callictita* and *Cacyreus* sections of Polymmatini. Scent scales not gathered into compact brands except in some Candalidini and *Uranothauma* and *Callictita* sections, but occur spread over wing surfaces in alternate rows with ordinary scales; hair brushes never present 7

7 (6) Male genitalia (Text-fig. 69) with uncus lobes long, curved and digitate; well-developed saccus always present; juxta large usually with wing-like appendages. Fore wing with veins 6 and 7 always close at their point of origin, sometimes connate or briefly stalked. No secondary sexual characters. ***LYCAENINAE*** (p. 441)

– Male genitalia variable, but never closely resembling the pattern of Lycaeninae. Fore wing with veins 6 and 7 separate, sometimes widely so. Except in Lycaenesthini secondary sexual characters present more often than not ***POLYOMMATINAE*** (p. 441)

Key to the Tribes and Sections of Lipteninae

1 Under surface of wings with spinules on veins. Palpi very small, shorter than head. Hind wing with precostal vein. ***PENTILINI***, 3 sections. . . 2

– No spinules on veins. Palpi normally developed. Hind wing without precostal vein, except in *Durbania* section. ***LIPTENINI***, 5 sections . . 4

2 (1) Male genitalia (Text-fig. 7) symmetrical; brachia present; valvae joined by transtilla above penis . . . . . . ***Alaena*** section (p. 423)

– Male genitalia asymmetrical, except in *Telipna;* no brachia; valvae separate 3

3 (2) Male genitalia (Text-fig. 6) with valvae fused to vinculum; saccus not joined to 8th sternite; penis with a 'flail' . . . . . ***Pentila*** section (p. 423)

– Male genitalia (Text-figs 8, 9) with valvae hinged to vinculum; saccus fused to 8th sternite; penis without a flail . . . . ***Telipna*** section (p. 423)

4 (1) Hind wing with precostal vein . . . . . ***Durbania*** section (p. 424)

– Hind wing without a precostal vein 5

5 (4) Fore wing veins 6 and 7 stalked. Male genitalia (Text-figs 10, 11) without brachia . . . . ***Mimacraea*** section (p. 424)

– Fore wing veins 6 and 7 not stalked, except briefly in *Tetrarhanis*. Except in *Iridana* section (text-fig. 15), brachia usually present 6

6 (5) Fore wing vein 7 arises at or very close to apex of cell; veins 12, 11 and 10 normal and separate 7

– Fore wing vein 7 arises well before end cell; abnormalities of veins 12, 11 or 10 may occur . . . . ***Epitola*** section (p. 424)

7 (6) Fore wing veins 2 and 3 much curved down towards vein 1; vein 7 incomplete in *Iridana*. Hind wing costa concave in *Teratoneura* ***Iridana*** section (p. 424)

– Fore wing veins 2 and 3 not curved towards vein 1; vein 7 complete; hind wing costa not concave . . . . . . ***Liptena*** section (p. 424)

KEY TO THE SECTIONS OF LIPHYRINAE

1 Fore wing veins 6 and 7 stalked. Palpi shorter than head. Proboscis absent. No secondary sexual characters. Male genitalia (Text-fig. 16) with brachia ***Liphyra*** section (p. 426)

– Fore wing veins 6 and 7 not stalked. Palpi longer than head. Proboscis present (except in *Aslauga pandora*), but may be small. Secondary sexual characters present on hind wing. Male genitalia (Text-fig. 17) without brachia . . . . ***Aslauga*** section (p. 426)

KEY TO THE TRIBES AND SECTIONS OF MILETINAE

1 Male fore tarsus fused to a single segment 2

– Male fore tarsus segmented and clawed . . ***LACHNOCNEMINI*** (p. 427)

2 (1) Legs normal. Palpi symmetrical. ***SPALGINI***, 2 sections 3

– Legs abnormal, very long and thin, or flattened and blade-like, or with swollen tibiae. Palpi asymmetrical (but character variable in *Taraka*) 4

3 (2) Fore wing veins 6 and 7 stalked. Nearctic . . . ***Feniseca*** section (p. 427)

– Fore wing veins 6 and 7 separate, latter from before end cell. Oriental and African . . . . ***Spalgis*** section (p. 427)

4 (2) Male genitalia (Text-figs 24, 25) with uncus/tegumen complex not greatly enlarged; brachia absent. Proboscis very small. Fore wing veins 6 and 7 separate . . . . ***TARAKINI*** (p. 427)

Male genitalia (Text-figs 18, 19) with uncus/tegumen complex greatly enlarged into separate plates; brachia present. Proboscis normal. Fore wing veins 6 and 7 connate or stalked, except in a few species of *Allotinus*. ***MILETINI***, 2 sections 5

5 (4) Hind wing with precostal vein. African . . ***Megalopalpus*** section (p. 427)

– No precostal vein. Oriental . . . . . . ***Miletus*** section (p. 426)

KEY TO THE TRIBES AND SECTIONS OF THECLINAE

1 Hind wing with dominant tail or tooth at vein 2 (but a few species of Ogyrini and Luciini have longest tail or tooth at veins 3 or 4) *or* tailless and with 10 or 11 fore wing veins 2

– Hind wing with dominant tail at vein 1b (but only bluntly toothed in *Gonatomyrina*) *or* tailless and with 12 fore wing veins (except sometimes in *Chrysoritis*—see subhead 32) 30

2 (1) Fore wing with 10 veins and hind wing not tailed at vein 1b 3

– Fore wing with 11 veins *or* with 10 veins and hind wing tailed at vein 1b . . 7

3 (2) Male genitalia with juxta. Eyes smooth 4

– Male genitalia without juxta. Eyes hairy 5

4 (3) Antenna with nudum confined to moderately abrupt club; shaft segments about four times as long as wide. No secondary sexual characters. Male fore tarsus ending in tapered, down-curved point . ***HYPOTHECLINI*** (p. 433)

– Antenna with gradual club and nudum extending down shaft; shaft segments not much longer than wide. Male with scent brand. Male fore tarsus stubby-tipped. *Yasoda*, part of ***Loxura*** section of ***LOXURINI*** (p. 434)

5 (3) Fore wing veins 11 and 12 touch. Male with hair brush on fore wing dorsum. Male fore tarsus ends in tapered, down-curved point. *Sithon*, part of ***Deudorix*** section of ***DEUDORIGINI*** (p. 439)

– Fore wing veins 11 and 12 free. Males never with hair brush on fore wing dorsum. Male fore tarsus stubby-tipped. ***EUMAEINI***, 2 sections . . 6

6 (5) Male fore tarsus sybcylindrical and spined throughout. ***Eumaeus*** section (p. 440)

– Male fore tarsus centrally swollen and spined only at tip. ***Trichonis*** section (p. 441)

7 (2) Hind wing not tailed at vein 1b (may be toothed). 8

– Hind wing tailed at vein 1b 21

8 (7) Hind wing tailed at vein 2 *or* tailless and with antennal nudum extending unbroken below club *or* with hairy eyes 10

– Hind wing no tail at vein 2 (may be toothed there). Antennal nudum ending on club or interrupted by bands of scales beginning on club. Eyes smooth. ***LUCIINI***, 2 sections 9

9 (8) Male genitalia (Text-fig. 27) with two-pronged uncus; juxta large, Y-shaped. ***Lucia*** section (p. 429)

– Male genitalia (Text-fig. 28) with uncus not produced; juxta absent or reduced to a small semi-circular band ***Hypochrysops*** section (p. 429)

10 (8) Fore wing with veins 6 and 7 connate or stalked 11

– Fore wing with veins 6 and 7 separate (separation may be slight in Deudorigini) 16

11 (10) Eyes smooth. Palpi not hairy (except in *Pseudalmenus*). Australian 12

– Eyes hairy *or*, if smooth, palpi are hairy. Not Australian 13

12 (11) Palpi with third joint very short in male; second joint clothed appressed scales. Fore wing always with 11 veins, veins 6 and 7 connate. Hind wing termen usually very crenulate, but not tailed at vein 2; rarely with blunt tail at veins 1b, 3 or 4 longer than the crenulation at vein 2. ***OGYRINI*** (p. 431)

– Palpi with third joint at least half as long as second joint; second joint hairy or with some bristly scales. Fore wing sometimes with 12 veins in male; veins 6 and 7 sometimes stalked. Hind wing tail or long tooth at vein 2 longer than any other ***Jalmenus*** section of ***ZESIINI*** (p. 432)

13 (11) Legs abnormal, tibiae with large projections at tarsal end ***TOMARINI*** (p. 439)

– Legs normal 14

14 (13) Male with scent brand on hind wing and associated hair brush on fore wing dorsum. Hind wing tailless but produced at tornus. Eyes hairy. Male genitalia without juxta ***Capys*** section of ***DEUDORIGINI*** (p. 439)

– No secondary sexual characters. Hind wing not produced except in *Amblopala*, which has smooth eyes. Male genitalia (Text-figs 29–32) with juxta. ***THECLINI***, 2 sections 15

15 (14) Hind-wing tailless but produced into a long tornal lobe; fore wing apex slightly truncate ***Amblopala*** section (p. 430)

– Hind wing not produced and usually tailed; fore wing not truncate ***Thecla*** section (p. 430)

16 (10) Eyes hairy. Male usually with scent brand on hind wing and associated hair brush on fore wing dorsum ***Deudorix*** section of ***DEUDORIGINI*** (p. 439)

– Eyes smooth. No scent brands, except on fore wing in some *Drina* species 17

17 (16) Fore wing origin of vein 5 much closer to vein 6 than to vein 4 ***Arhopala*** section of ***ARHOPALINI*** (p. 431)

– Fore wing veins 4, 5 and 6 more or less equidistant 18

18 (17) Under surface not white or orange. Hind wing not produced at tornus; tailless or tailed, sometimes at veins 3 and 4 as well as at vein 2 19

– Under surface mainly white or orange. Hind wing produced, with long single tail at vein 2 20

19 (18) Male genitalia (Text-fig. 39) without lateral ridge; valvae ventrally conjoined for at least half their length. Hind wing not tailed at vein 4 ***Surendra*** section of ***ARHOPALINI*** (p. 431)

– Male genitalia (Text-fig. 40) with a lateral ridge (as in *Arhopala* section); valvae free. Female hind wing tailed at vein 4 as well as at veins 3 and 2 ***Semanga*** section of ***ARHOPALINI*** (p. 431)

20 (18) Under surface mainly white. ***Drina*** section of ***LOXURINI*** (p. 434)

– Under surface mainly orange. *Loxura*, part of ***Loxura*** section of ***LOXURINI*** (p. 434)

21 (7) Under surface without metallic, silvery markings on all wings 23

– Under surface with silvery markings on all wings. ***CATAPAECILMATINI***, 2 sections 22

22 (21) Eyes hairy. Hind wing normally shaped. Male with scent brands on fore wing. Male genitalia (Text-fig. 44) with juxta ***Catapaecilma*** section (p. 433)

– Eyes smooth. Hind wing with false tornus in space 1b. No scent brands. Male genitalia (Text-fig. 47) without juxta . . ***Acupicta*** section (p. 433)

23 (21) Fore wing with 12 veins in male; veins 6 and 7 connate. ***Zesius*** section of ***ZESIINI*** (p. 432)

– Fore wing with 10 or 11 veins; veins 6 and 7 separate 24

24 (23) Antenna with nudum confined to club; shaft segments 3–4 times as long as wide. Male fore tarsus ending in tapered, down-curved point. ***OXYLIDINI*** (p. 433)

– Antenna with nudum continued down shaft; shaft segments less than twice as long as wide. Male fore tarsus stubby-tipped 25

25 (24) Fore wing with origin of vein 5 much closer to vein 6 than to vein 4 . . 26

– Fore wing with veins 4, 5 and 6 approximately equidistant 27

26 (25) Upper surface mainly blue. Hind wing tail at vein 2 short, about 4 mm. long. *Thaduka*, part of . . ***Arhopala*** section of ***ARHOPALINI*** (p. 431)

– Upper surface mainly white. Hind wing tail at vein 2 broad and about 25 mm long . . . ***Neomyrina*** section of ***LOXURINI*** (p. 434)

27 (25) Hind wing termen stepped at vein 4 as much or more than at vein 3. Male genitalia (Text-fig. 52) with asymmetrical brachia . . ***HORAGINI*** (p. 434)

– Hind wing termen stepped more at vein 3 than at vein 4. Brachia symmetrical or absent 28

28 (27) Male genitalia (Text-fig. 51) of ordinary pattern, with brachia. *Thamala* and *Eooxylides*, part of . . . ***Loxura*** section of ***LOXURINI*** (p. 434)

– Male genitalia abnormal and without brachia. ***CHERITRINI***, 2 sections . 29

29 (28) Male genitalia (Text-fig. 53) with juxta and large hood-like structure hinged to valvae and tegumen. African . . . ***Dapidodigma*** section (p. 435)

– Male genitalia (Text-fig. 42) without juxta or hood-like structure. Oriental ***Cheritra*** section (p. 435)

30 (1) Fore wing with veins 5 and 6 connate or very close at their origins ***AMBLYPODIINI*** (p. 432)

– Fore wing with veins 5 and 6 well separated at their origins except in some Remelanini 31

31 (30) Palpi very small, less than half length of head. Proboscis very short. Fore wing disproportionately large compared with hind wing ***Pseudaletis*** section of ***APHNAEINI*** (p. 436)

– Palpi, proboscis and hind wing normally developed 32

32 (31) Under surface of fore wing, and often hind wing also, with metallic golden, silvery or nacreous spots or stripes (except in tailless African genus *Chrysoritis* which often has only 11 fore wing veins; it resembles a 'Copper' and individuals with 11 veins work out to subhead 8: Luciini). No secondary sexual characters . . . . . ***Aphnaeus*** section of ***APHNAEINI*** (p. 436)

– Under surface of fore wing without metallic markings. Secondary sexual characters often present 33

33 (32) In male third joint of palpi at least half as long as second joint. Eyes hairy (except in *Pseudotajuria* and one *Ancema* species). Male genitalia without or with only a vestigial juxta 36

– In male third joint of palpi less than half second joint (except in *Pseudiolaus*). Eyes smooth (except in *Trichiolaus*). Male genitalia with juxta. ***IOLAINI***, 3 sections 34

34 (33) Male fore tarsus ending in tapered, down-curved point ***Hemiolaus*** section (p. 437)

– Male fore tarsus stubby-tipped or segmented 35

35 (34) Antenna with nudum confined to abrupt club. Male abdomen with chitinous structures below the genitalia (Text-fig. 59) ***Britomartis*** section (p. 437)

– Antenna with rather gradual club and nudum extending down shaft. Abdomen normal . . . . ***Iolaus*** section (p. 436)

36 (33) Fore wing with 11 veins. Male fore tarsus stubby-tipped. ***REMELANINI*** (p. 437)

– Fore wing with 10 veins. Male fore tarsus ending in a tapered, down-curved point . . . . ***HYPOLYCAENINI*** (p. 438)

Key to the Sections of Lycaeninae

1 Under surface marked as in Polyommatinae. Male fore tarsus ending in a sharp, down-curved point . . . . . ***Lycaena*** section (p. 441)

– Under surface marked as in Theclinae. Male fore tarsus ending in a blunt, rounded point . . . . ***Heliophorus*** section (p. 441)

Key to the Tribes and Sections of Polyommatinae

1 Antenna with nudum not crossed by bands of scales. Male fore tarsus ending in a tapered, down-curved point 2

– Nudum crossed by bands of scales almost to tip of club. Male fore tarsus stubby-tipped or briefly tapered to a blunt, rounded point ***CANDALIDINI*** (p. 442)

2 (1) Hind wing cilia elongated into tufts at veins 1b, 2 and 3, except in a few species; never tailed. No specialized scent scales. Male genitalia (Text-fig. 70) with well-developed saccus . . . . . ***LYCAENESTHINI*** (p. 442)

– Hind wing cilia not elongated into tufts, but frequently with a filamentous tail at vein 2. Scent scales usually present. Male genitalia with saccus absent or very weakly developed (except in small *Una* and *Petrelaea* sections of Polyommatini) 3

3 (2) Antennae exhibit strong sexual dimorphism; in female club long, thin, cylindrical, with nudum extending down shaft almost to base. Male androconia 'hieroglyphically-marked' (Pl. 4, Figs 20–22 and Text-fig. 160) ***NIPHANDINI*** (p. 442)

– Antennae not strongly sexually dimorphic; nudum always confined to club. Androconia various, but never as in Niphandini. ***POLYOMMATINI***, 30 sections 4

4 (3) Fore wing with 10 veins . . . . ***Cupidopsis*** section (p. 443)

– Fore wing with 11 veins 5

5 (4) Fore wing vein 11 not completely free from cell to costa; may be anastomosed with or touch vein 12[5], or be linked to vein 12 by a short cross-vein . . . 6

– Fore wing vein 11 completely free from vein 12 24

6 (5) Male genitalia (Text-figs 75, 76, 78) with prominent saccus 7

– Saccus absent or weakly developed 8

7 (6) Cilia much elongated at hind wing tornus. No scent scales ***Una*** section (p. 443)

– Cilia not elongated at hind wing tornus. Scent scales present in two out of three species . . . . ***Petrelaea*** section (p. 444)

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[5] This character is, unfortunately, not 100% consistent; for example, in species which normally have veins 11 and 12 of the fore wing touching, occasional examples may be found in which these veins either anastomose briefly or are completely free.

8 (6) Fore wing veins 11 and 12 do not touch but are linked by a cross-vein **Jamides** section (p. 445)

– Fore wing veins 11 and 12 anastomose or touch 9

9 (8) Eyes hairy. Under surface markings catenulate, banded or abnormal *or*, if maculate, with a fuscous streak below vein 12 on fore wing 10

– Eyes smooth, except in some species of *Zizeeria* section with maculate markings but no streak below vein 12 18

10 (9) Male genitalia (Text-figs 80–88) with brachia absent or vestigial **Upolampes** section (p. 444)

– Brachia present, except in *Erysichton* (*Nacaduba* section) 11

11 (10) Under surface with usual Lycaenine pattern greatly modified and usually unrecognisable 12

– Under surface with Lycaenine pattern recognisable 13

12 (11) Under surface with black or fuscous costal and marginal borders which absorb all or most of the characteristic Lycaenine markings and sometimes bear metallic silvery streaks or lunules. One aberrant species, *Psychonotis purpurea* (H. H. Druce), has the under surface of fore wing fuscous with a yellow subapical band and spot end-cell and the hind wing buff bearing an ill-defined reddish postdiscal band. Australian and Oriental **Danis** section (p. 444)

– Under surface white, yellowish at wing bases, with a black streak from base below the fore wing cell, some small black costal and marginal marks and a subbasal spot on hind wing astride vein la. African **Phlyaria** section (p. 446)

13 (11) Androconia (Text-figs 157, 162) (absent in one species, '*Lycaena*' *heritsia* Hewitson) comprise specialized hair scales or short plume scales or a combination of both gathered into raised patches, streaks between the veins or darkened areas; battledore or paddle scales never found. Hind wing sometimes with vestigial tornal lobe 14

– Androconia, if present, comprise battledore or paddle scales. Hind wing without indications of a lobe 15

14 (13) Male genitalia (Text-figs 90, 91, 100) with normal penis; suprazonal portion short. African **Uranothauma** section (p. 446)

– Male genitalia (Text-fig. 89) with penis with foot-stalk; suprazonal portion long and tapered. Papuan **Callictita** section (p. 445)

15 (13) Under surface of fore wing with a fuscous streak below vein 12 **Azanus** section (p. 448)

– No fuscous streak below vein 12 16

16 (15) Fore wing veins 11 and 12 touch briefly. Battledore scales (Text-fig. 140) with flat base and pedicel very narrow at its point of attachment. *Catochrysops*, part of **Catochrysops** section (p. 445)

– Fore wing veins 11 and 12 anastomosing, sometimes as far as costa. Battledore scales with base convex and tapering normally into the pedicel 17

17 (16) Male genitalia (Text-figs 77, 79) with suprazonal portion of penis short; ductus entering on dorsal surface **Nacaduba** section (p. 444)

– Male genitalia (Text-figs 92, 98) with sub- and suprazonal portions of penis subequal; ductus entering cephalad **Theclinesthes** section (p. 444)

18 (9) Under surface unmarked except for faintly indicated submarginal series. **Famegana** section (p. 447)

– Under surface with at least postdiscal markings present 19

19 (18) Under surface no markings internal to postdiscal series except two small costal spots on fore wing **Pithecops** section (p. 448)

– Under surface with discal and subbasal markings 20

20 (19) Fore wing veins 11 and 12 anastomosed at costa. Penis bifid, beaklike 21

– Fore wing veins 11 and 12 separate at costa. Penis not bifid 22

21 (20) Fore wing with costal spots in spaces 9 and 10 on under surface of fore wing. No scent scales. Male genitalia (Text-fig. 110) without abnormal dorsal processes ***Zizula*** section (p. 447)

– Fore wing without costal spots in spaces 9 and 10. Scent scales may be present. Male genitalia (Text-fig. 109) with abnormal dorsal processes ***Brephidium*** section (p. 448)

22 (20) Under surface of fore wing with a fuscous streak below vein 12 ***Castalius*** section (p. 447)

– No fuscous streak below vein 12, except in *Talicada* (*Everes* section) easily recognized by broad, orange marginal area of hind wing 23

23 (22) Battledore scales, when present, rounded. Male genitalia (Text-fig. 116) with undivided uncus ***Everes*** section (p. 448)

– Battledore scales (Text-figs 141, 143), when present, with upper margin flat or concave. Male genitalia (Text-fig. 106) with divided uncus ***Zizeeria*** section (p. 447)

24 (5) Androconia, when present, of normal battledore type 25

– Male with unique, flask-shaped androconia (Text-fig. 161) ***Lampides*** section (p. 445)

25 (24) Male genitalia with abnormal uncus, lobes not simple 26

– Lobes of uncus simple 28

26 (25) Eyes hairy. Uncus lobes bearing a tubercle (Text-figs 102, 103) ***Cacyreus*** section (p. 446)

– Eyes smooth. Uncus lobes double 27

27 (26) Under surface marked like *Castalius*, with a black streak below vein 12. Male genitalia (Text-fig. 107) without brachia; vinculum broad and rounded. ***Zintha*** section (p. 447)

– No streak below vein 12. Male genitalia (Text-fig 113) with small brachia; lower part of vinculum narrow ***Eicochrysops*** section (p. 448)

28 (25) Under surface of fore wing with a fuscous streak below vein 12 (sometimes obscure in *Cyclyrius*) ***Leptotes*** section (p. 446)

– No fuscous streak below vein 12 29

29 (28) Battledore scales (Text-fig. 139) rectangular with a flat base and pedicel tapered at top and loosely attached. Male genitalia (Text-fig. 96) without brachia. *Rysops*, part of ***Catochrysops*** section (p. 445)

– Battledore scales, when present, with base more or less rounded and tapered into the pedicel. Male genitalia with brachia, except in majority of *Lycaenopsis* section 30

30 (29) Male genitalia (Text-fig. 117) usually without brachia; vinculum with a triangular or semi-circular projection directed cephalad; penis with suprazonal portion short, coecum developed ***Lycaenopsis*** section (p. 449)

– Male genitalia with brachia; vinculum not so strongly produced cephalad; penis without a coecum 31

31 (30) Male genitalia (Text-fig. 119) with tegumen reduced; juxta (furca) with short arms ***Euchrysops*** section (p. 449)

– Tegumen normal; arms of furca long 32

32 (31) Male genitalia (Text-figs 120, 121) with uncus lobes more or less digitate, parallel, close together and directed caudad; suspensorium almost always present; penis with alulae at zone ***Polyommatus*** section (p. 449)

– Uncus lobes not as above; no suspensorium nor alulae 33

33 (32) Battledore scales, when present, rectangular (Text-fig. 144). Penis with ductus entering ventro-cephalad (Text-figs 111, 112). African ***Actizera*** section (p. 447)

– Battledore scales, when present, rounded. Penis with ductus entering dorso-cephalad or cephalad (Text-fig. 118). Holarctic ***Glaucopsyche*** section (p. 449)

DIAGNOSES OF SUBFAMILIES, TRIBES AND SECTIONS, WITH A LIST OF INCLUDED NOMINAL GENERA

In each subfamily and tribe I give the name and date of the author who first used the stem of the type-genus in such manner as to constitute a valid family-group name under the current *International Code of Zoological Nomenclature*. It should not be assumed that the originally included genera and those now included by me are even approximately similar; in some cases no genera are common other than the type-genus. It is perhaps unfortunate that of only four valid Lycaenid family-group names included in the *Official List*, namely Lipteninae, Pentilini, Strymonidi and Everidi (Cupidinini), the last two fall as subjective synonyms of Eumaeini Doubleday, 1847, and Polyommatini Swainson, 1827, respectively, which have many years' priority. The butterfly literature is so vast that it is impossible to be certain that the authors and dates are in all cases the earliest. The family-group names listed below should therefore be looked on as provisional, and it is to be hoped that any entomologist spotting an error will bring it to light.

I have aimed to include all Lycaenid generic names other than those which have been placed on the *Official Index of Rejected and Invalid Names in Zoology*. References to the original descriptions of the genera are not given, since to do so would greatly increase the length of this paper and would merely duplicate the information readily available in Hemming (1967) and Cowan (1968, 1970). The order in which nominal genera are listed has no taxonomic significance, but I have tried to position tribes next to their closest relatives—a well-nigh impossible task bearing in mind that evolution is all-directional. I have made no distinction between genera and subgenera, and have shown as synonyms only objective synonyms and preoccupied names which have been superseded by replacement names. I have followed Hemming and Cowan in showing other generic names either as potentially valid and available or as preoccupied and thus invalid. Many genera in the former category have been relegated by other authors, in my view often correctly, to the status of subjective synonyms. Indeed my impression is that far too many genera have been erected for the Holarctic Region, many having no significance above the level of the species-group or even species-subgroup. In other regions, despite the existence of a number of undoubted subjective synonyms a number of new genera are still required and in a later section I make a start by naming and describing several to which I have drawn attention either in text or key.

Family **LYCAENIDAE** Leach

Lycaenida Leach, 1815 : 129. Type-genus: *Lycaena* Fabricius, 1807.

Subfamily **LIPTENINAE** Röber

Lipteninae Röber, 1892 : 262. Type-genus: *Liptena* Westwood, 1851.

Fore wing usually with all 12 veins present, but occasionally with vein 8 absent. Hind wing without tail or tornal lobe; precostal vein sometimes present. Colour and pattern very variable, sometimes mimicking other families; on the under surface the usual Lycaenine pattern is seldom recognizable. Secondary sexual characters, usually present in males, are always confined to the fore wing; these commonly comprise swollen veins clothed with small scales, but patches of specialized scales and hair fringes may be present in addition. Palpi variable; second joint usually clothed with appressed scales, but sometimes with bristly or hairy scales. Antennae very variable (see under sections). Proboscis, except when very small and possibly undergoing atrophy, bears few fine sensory hairs on shaft; terminal papillae not strongly developed. Male fore tarsus fused to a single stubby-tipped segment. Mid and hind tibiae without terminal spurs. Male genitalia very variable (see under tribes and sections). Early stages: known larvae are similar to those of Poritiinae, and both differ widely from all other Lycaenid larvae in resembling the larvae of the moth family Lymantriidae, with comparatively broad and barely retractile head and dorsal and lateral tufts of hairs; known foods are lichen and microscopic fungi; pupae are attached by cremaster without girdle and retain the larval skin. Wholly Ethiopian subfamily, divided into two tribes.

Tribe **PENTILINI** Aurivillius

Pentilini Aurivillius, 1914 : 298. Type-genus: *Pentila* Westwood, 1851.

Fore wing with 12 veins. Hind wing with precostal vein. Under surface with semi-erect spinules on veins; scaling sometimes sparse and may include strongly modified scales (Text-fig. 132). Palpi very small, shorter than head. Antenna with abrupt to moderately abrupt club; nudum confined to club (to last four segments in *Alaena*); segments number about 24–32. Middle leg abnormal, with usual trough on mid-tibia absent or very weakly developed. Male genitalia abnormal and may be asymmetrical; vinculum more or less interrupted and hinged at tergal-sternal suture; saccus directed more or less inflexibly caudad; brush organs apparently never occur. Divided into 3 weakly separated sections on the basis of differences in the male genitalia.

Alaena section

Male genitalia (Text-fig. 7) symmetrical; brachia present; valvae fused to lower part of vinculum and joined by a transtilla above the penis.

Included genera: *Alaena* Boisduval, 1847; *Ptelina* Clench, 1965.

Pentila section

Male genitalia (Text-fig. 6) asymmetrical; no brachia; valvae fused to lower part of vinculum; penis very abnormal with an apparently permanently exserted 'flail'.

Included genera: *Pentila* Westwood, 1851; *Liptenara* Bethune-Baker, 1915.

Telipna section

Male genitalia symmetrical in *Telipna* (Text-fig. 8), asymmetrical in *Ornipholidotos* (Text-fig. 9); no brachia; valvae hinged to vinculum at tergal-sternal suture; saccus distally fused to 8th sternite, which is more strongly sclerotized than usual, and the whole complex capable of up and down movement.

Included genera: *Telipna* Aurivillius, 1895; *Ornipholidotos* Bethune-Baker, 1914.

Tribe **LIPTENINI** Röber

Under surface without spinules on veins; scaling normal. Palpi longer than head. Mid-tibia of normal Lycaenine type. Male genitalia with normal vinculum; saccus, when developed, flexible and in its natural position recurved and directed caudad; true juxta absent, but a homologous structure is present comprising a sheath folded round penis and connected to sacculi by a pedicel of varying length; rarely pedicel bears long, paired arms extending dorsad. Divided into 5 sections.

Durbania section

Fore wing with 12 veins. Hind wing with precostal vein (absent in remaining sections). Antennae with short, broad and more or less flattened club with nudum confined to its upper half; segments number about 24–32; shaft segments usually about 3–4 times as long as wide. Proboscis very short. Male genitalia (Text-fig. 12) rather variable; brachia present but reduced in *Durbania;* brush organs apparently do not occur. Rather widely separated from remaining sections and should perhaps rank as a tribe.

Included genera: *Durbania* Trimen, 1862; *Cooksonia* H. H. Druce, 1905; *Sheffieldia* H. H. Druce, 1912; *Durbaniella* van Son, 1959; *Durbaniopsis* van Son, 1959.

Mimacraea section

Fore wing with veins 6 and 7 with a long stalk. Antennae with club variable, sometimes cylindrical and fairly long; nudum confined to club, but more extensive than in *Durbania* section; segmentation similar. Proboscis of average development (as in succeeding sections). Male genitalia (Text-figs 10, 11) without brachia; in *Mimacraea* and *Mimeresia* uncus enlarged and asymmetrical; brush organs apparently do not occur.

Included genera: *Mimacraea* Butler, 1872; *Mimeresia* Stempffer, 1961; *Pseuderesia* Butler, 1874; *Teriomima* Kirby, 1887; *Eresiomera* Clench, 1965; *Citrinophila* Kirby, 1887; *Euthecta* Bennett, 1954; *Baliochila* Stempffer & Bennett, 1953; *Cnodontes* Stempffer & Bennett, 1953; *Eresinopsides* Strand, 1911; *Eresina* Aurivillius, 1898; *Toxochitona* Stempffer, 1956; *Argyrocheila* Staudinger, 1892.

Liptena section

Fore wing with veins 6 and 7 usually separate though close, occasionally connate or with only a short stalk. Antennae as in *Mimacraea* section. Male genitalia (Text-figs 3, 13) with brachia present except in a few species of *Liptena* (an omnibus genus requiring subdivision); brush organs present sometimes.

Included genera: *Liptena* Westwood, 1851; *Falcuna* Stempffer & Bennett, 1963; *Larinopoda* Butler, 1871; *Micropentila* Aurivillius, 1895; *Tetrarhanis* Karsch, 1893; *Lectiles* Birkett Smith, 1960; *Leucolepis* Karsch, 1893, invalid, praeocc.

Iridana section

Venation more or less as in *Liptena* section, except that on fore wing vein 2 is strongly bowed down towards vein 1 and, in *Iridana*, vein 7 is incomplete. Antenna with cylindrical club in *Teratoneura*, but slightly flattened in *Iridana;* nudum extending down shaft; segments number about 34–42, those on shaft shorter than in previous sections. Male genitalia (Text-fig. 15) without brachia; brush organs present.

Included genera: *Iridana* Aurivillius, 1920 ((= *Iris* Staudinger, 1891; *Iridopsis* Aurivillius, 1898, praeocc.); *Teratoneura* Dudgeon, 1909.

Epitola section

Fore wing with veins 6 and 7 widely separated at origin, vein 7 from well before end cell; veins 10, 11 and 12 sometimes abnormal, veins 11 and 12 may be anastomosed or veins 10 and 11 may be connate or stalked. Antennae with cylindrical club and nudum extending down shaft, except in *Epitolina* (which is 'odd man out' in several respects and possibly deserves to be placed in a section by itself); segments number up to 48 and may be rather short on shaft. Male genitalia (Text-fig. 14) with brachia, except in *Pseudoneaveia;* brush organs occur in all genera except *Epitolina* and *Batelusia* (*Pseudoneaveia* not examined); scales of brush organ may be very long and thin (e.g. in *Phytala, Hewitsonia, Powellana*).

Included genera: *Epitola* Westwood, 1851; *Deloneura* Trimen, 1868; *Ebepius* Hemming, 1964 (= *Poultonia* Neave, 1904, praeocc.); *Batelusia* H. H. Druce, 1910; *Tumerepedes* Bethune-Baker, 1913; *Pseudoneaveia* Stempffer, 1964; *Neaveia* H. H. Druce, 1910; *Epitolina* Aurivillius, 1895; *Stempfferia* Jackson, 1962; *Phytala* Westwood, 1851; *Neoepitola* Jackson, 1964; *Aethiopana* Bethune-Baker, 1915; *Hewitsonia* Kirby, 1871 (= *Corydon* Hewitson, 1869, praeocc.), *Powellana* Bethune-Baker, 1908; *Hypophytala* Clench, 1965.

Subfamily **PORITIINAE** Doherty

Poritinae Doherty, 1886 : 110. Type-genus: *Poritia* Moore, 1886.

Fore wing with 10, 11 or 12 veins; vein 11 always anastomosed with vein 12 and sometimes with vein 10 also. Hind wing with a very short precostal vein or indications thereof; no tail nor tornal lobe. On under surface the normal Lycaenine pattern may be much modified. Secondary sexual characters comprise scent brands usually overlaid by erectile hair tufts on hind wing and, in *Poritia*, brands on the sides of the abdomen associated with hair fringes on the hind wing. Eyes nearly always smooth (hairy in a few species of *Deramas*.) Antennae with cylindrical club and nudum extending down shaft; segments vary between 30 and 48; shaft segments about 1½–2 times as long as wide. Palpi of average development, clothed with appressed scales. Male fore tarsus fused to a single stubby-tipped segment. Mid and hind tibiae without terminal spurs. Ventral surface of abdomen in both sexes bears sparse tufts of bristles on last 2–5 unmodified segments. Male genitalia with brachia; saccus, when developed, directed caudad; true juxta absent, but in *Cyaniriodes* (Text-fig. 5) there is a homologous structure resembling the sheath and pedicel of *Liptenini*. In *Deramas* (Text-fig. 4) and *Zarona* a similar structure is present, but the pedicel is directed between and not connected to the sacculi, which bear crescent-shaped sclerites which loosely embrace the lower half of the penis distad of the sheath. Early stages: egg hexagonal; larva (see p. 410) Lymantriid-like, phytophagous, gregarious and processionary; pupa suspended by cremaster without girdle. No tribes or sections. Oriental.

Included genera: *Poritia* Moore, 1886; *Simiskina* Distant, 1886; *Cyaniriodes* de Nicéville, 1890; *Poriskina* H. H. Druce, 1895; *Deramas* Distant, 1886; *Zarona* de Nicéville, 1888; *Massaga* Doherty, 1889, praeocc.

Subfamily **LIPHYRINAE** Doherty

Liphyrinae Doherty, 1889 : 409. Type-genus: *Liphyra* Westwood, 1864.

Fore wing with 12 veins; veins 10, 11 and 12 free. Hind wing tailless. On under surface the standard Lycaenine pattern is not recognizable. Eyes smooth. Palpi clothed with appressed scales; may be very small. Antennae short and stout, with cylindrical and usually gradually incrassate club; nudum extending down shaft; segments number about 30–44; shaft segments usually about as wide as long. Proboscis usually wholly or partially atrophied, but when normally developed bears a regular series of fine sensory hairs on shaft. Male fore tarsus segmented, clawed and fully functional. Mid and hind tibiae without terminal spurs. Male genitalia rather commonplace (see under sections). Early stages: larva with skirt-like carapace, wholly aphytophagous, living in ants' nests or in close association with ants; pupa attached by cremaster without girdle, sometimes within, or retaining, the larval skin. No tribes, but divided into 2 sections. Mainly African, with weak representation in Oriental and Australian Regions

Liphyra section

Large species. Male without secondary sexual characters. Palpi very small, shorter than head. Proboscis wholly atrophied. Male genitalia (Text-fig. 16) with brachia; tegumen strongly recurved cephalad.

Included genera: *Liphyra* Westwood, 1864 (= *Sterosis* C. & R. Felder, 1865); *Euliphyra* Holland, 1890.

Aslauga section

Small to moderate-sized species. Male with a small scent brand on hind wing, bearing very small scales, near the base of vein 7, except in *A. pandora* H. H. Druce, which has a subcostal, probably visual, hind wing brand bearing large, fuscous scales. Palpi of average development. Proboscis variable, normally sized, very small or even completely aborted. Male genitalia (Text-fig. 17) without brachia; tegumen not much recurved. Wholly African.

Included genera: *Aslauga* Kirby, 1890; *Paraslauga* Bethune-Baker, 1924; *Egumbia* Bethune-Baker, 1924; *Euliphyrodes* Romieux, 1937.

Subfamily **MILETINAE** Corbet

Gerydinae Doherty, 1886 : 110. Type-genus: *Gerydus* Boisduval, 1836 [= *Miletus* Hübner, 1819].

Miletinae Corbet, 1939 : 63. [Valid under Article 40a of the Code.] Type-genus: *Miletus* Hübner, 1819.

Fore wing with 11 veins, veins 10, 11 and 12 free. Hind wing tailless and lobeless. On under surface normal Lycaenine pattern nearly always readily recognizable. Antenna with cylindrical club; nudum extending down shaft, except in one species of *Taraka*. Eyes smooth, except in *Lachnocnema*. Palpi variable, sometimes asymmetrical. Proboscis bears a series of fine sensory hairs on shaft, except when partially atrophied. Male fore tarsus segmented or fused to a single segment. Mid and hind tibiae without terminal spurs. Male genitalia very variable, but valvae always dorsally united by a membrane or some form of transtilla-like structure. Early stages: egg round, flattened, disc-like; larva onisciform, wholly aphytophagous; pupa suspended by cremaster, usually without girdle, or reclining on or below ground. Oriental and African, with weak representation in Holarctic Region. Divided into 4 tribes.

Tribe **MILETINI** Corbet

Fore wing with secondary sexual characters sometimes present, comprising a swollen portion of vein 4 rather sparsely clothed with small specialized scales (Pl. 6, figs 31, 32 and Text-fig. 134). Antenna with gradually incrassate club; nudum extending down shaft to base or very nearly so; segments number from about 36 to 62; shaft segments short, usually slightly longer than wide. Palpi long, asymmetrical; basal fleck bears a tuft of (?) sensory hairs. Male fore tarsus fused to a single segment and ending in a short, abrupt point. Legs more or less abnormal, very long and thin or flattened and blade-like or with mid and hind tibiae much swollen towards their lower ends. Male genitalia with uncus and tegumen developed into enormous paired plates; brachia present; valvae small, dorsally united by a weakly sclerotized transtilla cephalad of vinculum. Divided into 2 sections.

Miletus section

Hind wing without precostal vein. Male genitalia (Text-fig. 18) with uncus/tegumen plates subrectangular; brachia almost straight. Oriental.

Included genera: *Miletus* Hübner, 1819 (= *Symetha* Horsfield, 1828; *Gerydus* Boisduval, 1836); *Miletographa* Röber, 1892; *Archaeogerydus* Fruhstorfer, 1916;

Allotinus C. & R. Felder, 1865; *Paragerydus* Distant, 1884; *Logania* Distant, 1884 (= *Malais* Doherty, 1889).

Megalopalpus section

Hind wing with precostal vein. Male without secondary sexual characters. Male genitalia (Text-fig. 19) with uncus/tegumen plates triangular and bearing a broad, lobe-like process directed ventrad; brachia curved. African.

Included genus: *Megalopalpus* Röber, 1886.

Tribe **TARAKINI trib. n.**

Type-genus: *Taraka* Doherty, 1889.

Only two very small species. No secondary sexual characters. Antenna with well-defined, cylindrical club; nudum extending down shaft in *T. hamada* H. Druce but confined to club in *T. mahanetra* Doherty; segments number about 29–31; shaft segments about 3 times as long as wide. Palpi usually slightly asymmetrical. Male fore tarsus fused to a single segment and ending in a down-curved point. Tibiae somewhat swollen, especially mid-tibia. Male genitalia with uncus deeply divided into rather large, flat plates in *T. hamada* (Text-fig. 25), but not in *T. mahanetra* (Text-fig. 24); no brachia; valvae disto-dorsally conjoined by a strong membrane and ventrally conjoined for most of their length. Larvae feed on coccids. Oriental, just extending into Palaearctic Region.

Included genus: *Taraka* Doherty, 1889 (= *Taraka* de Nicéville, 1890).

Tribe **SPALGINI** Toxopeus

Spalgiinae Toxopeus, 1929 : 218. Type-genus: *Spalgis* Moore, 1879.

Small species without secondary sexual characters. Palpi symmetrical. Male fore tarsus fused to a single segment ending in a down-curved point. Male genitalia with uncus not, or not much, excavate; brachia present. Larvae feed on coccids; pupae resemble a monkey's head in miniature. Divided into 2 sections.

Spalgis section

Fore wing with veins 6 and 7 separate, the latter from before end cell. Antenna with club gradually incrassate; segments number about 33; shaft segments about 1½ times as long as wide. Male genitalia (Text-fig. 22) with valvae disto-dorsally joined by a weak membrane. Oriental and African.

Included genus: *Spalgis* Moore, 1879.

Feniseca section

Fore wing with veins 6 and 7 stalked. Antenna with club better defined than in *Spalgis*; segments number about 26. Male genitalia (Text-fig. 23) with valvae proximo-dorsally joined by a transtilla. Single Nearctic species.

Included genus: *Feniseca* Grote, 1869.

Tribe **LACHNOCNEMINI** Clench

[Luciidi Reuter, 1896 : 551.][6]
Lachnocnemini Clench, 1955 : 266. Type-genus: *Lachnocnema* Trimen, 1887.
Thestorinae Clench, 1955 : 266. [Preoccupied by Thestoridi Tutt, 1907.]

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[6] Based on '*Lucia*' *bibulus* (Fabricius), the type-species of *Lachnocnema*, which is unrelated to true *Lucia*. Application will be made to the International Commission on Zoological Nomenclature for the suppression of Luciidi Reuter and for the validation of Luciinae Waterhouse & Lyell, 1914.

Small to medium-sized species without secondary sexual characters, except that a visual brand of contrastingly coloured scales may be present on the fore wing of *Thestor*. Antenna short and stout; club gradual; segments number about 30; shaft segments slightly wider than long in *Thestor*, but rather longer in *Lachnocnema*. Male fore tarsus segmented, clawed and fully functional. Male genitalia (Text-figs 20, 21) with brachia; valvae incompletely joined dorsally by labiles. African.

Included genera: *Lachnocnema* Trimen, 1887; *Thestor* Hübner, 1819 (= *Arrugia* Wallengren, 1872).

Subfamily **CURETINAE** Distant

Curetaria Distant, 1884 : 196. Type-genus: *Curetis* Hübner, 1819.

Fore wing with 11 veins; veins 10, 11 and 12 free; vein 7 ends on termen. Hind wing tailless. No secondary sexual characters. Normal Lycaenine pattern recognizable on silvery white under surface. Eyes hairy. Palpi of average size, clothed with appressed scales. Antenna with cylindrical and rather gradual club; nudum extending down shaft almost to base; segments number about 44 to 48; shaft segments a little longer than wide; in both sexes the shaft bears on its ventral surface near the scape a sparse fringe of bristly sensillae of unknown function. Proboscis with prominent series of sensory hairs on shaft; terminal papillae strongly developed. Male fore tarsus fused to a single segment and ending in a tapered, down-curved point. Mid and hind tibiae with inconspicuous terminal spurs. Male genitalia (Text-fig. 26) Riodinid-like; uncus large and hood-like; brachia present; valvae dorsally joined by a central plate above the penis. Early stages: larva with long, permanently exserted cylindrical tubercles on 11th segment; pupa almost hemispherical, ventral surface flat, fastened by cremaster and weak girdle. Oriental, just extending into Palaearctic Region.

Included genus: *Curetis* Hübner, 1819 (= *Phaedra* Horsfield, 1829; *Anops* Boisduval, 1836).

Subfamily **THECLINAE** Swainson

Theclanae Swainson, 1831 : pl. 85. Type-genus: *Thecla* Fabricius, 1807.

Fore wing with 10, 11 or 12 veins; vein 7 ends on costa or at apex when only 10 or 11 veins are present, except in male of *Jacoona* and female of *Amblypodia;* veins 11 and 12 nearly always free. Hind wing without precostal vein; sometimes tailless but usually with 1, 2 or 3, very rarely 4, tails; sexual dimorphism in length and number of tails frequent; tornal lobe usually developed. On under surface the normal Lycaenine pattern is usually readily recognizable. Secondary sexual characters often present, most commonly comprising patches of specialized scales on fore wing or hind wing which may be associated with erectile hair brushes. Eyes smooth or hairy. Palpi very variable. Antennae nearly always with a cylindrical club, but a flattened club occurs in a few genera of Eumaeini and Hypolycaenini; nudum variable in extent, may be confined to club or may extend down shaft in an unbroken taper or in a series of detached patches; nudum frequently more extensive in female than in male. Proboscis with a smooth shaft except in some genera of Neotropical Eumaeini bearing short sensory hairs on the inner surface. Male fore tarsus usually fused to a single segment, but segmented, clawed and fully functional in a few apparently widely separated genera. Mid and hind tibiae with paired, terminal spurs, but these are rather inconspicuous in a few genera and are almost completely aborted in *Eumaeus*. Male genitalia very variable; penis more constant than any other component, almost always widely open on its dorsal surface for the reception of the ductus and with the suprazonal and subzonal portions usually more or less subequal; brush organs occur frequently in Neotropical genera of Eumaeini. Early stages: egg usually dome-shaped, often flattened on top, more rarely turban-shaped and resembling the egg of Polyommatinae; larvae most often more or less onisciform, but sometimes prominently shouldered or waisted; pupae usually girdled, but in a few tribes may be attached only by the cremaster; last pupal segment usually dilated in the form of a horse's hoof. Cosmopolitan.

Tribe **LUCIINI** Waterhouse & Lyell **stat. n.**

Luciinae Waterhouse & Lyell, 1914 : 111. Type-genus: *Lucia* Swainson, 1833.[7]

Fore wing with 11 veins; origin of vein 7 variable, may be separate from, connate or stalked with vein 6. Hind wing tailless, but termen usually slightly crenulate or toothed. No secondary sexual characters. Eyes smooth. Antennae with cylindrical, moderately abrupt club; nudum variable, may be entire and confined to club (most species of *Philiris*) or may be crossed by bands of scales commencing about half-way down club and continued down shaft in detached patches; segments number about 25–36; shaft rather narrow, with segments about 3 or 4 times as long as wide. Palpi with second joint clothed with appressed scales or, rarely, with bristly scales. Male fore tarsus segmented and clawed in *Titea*, otherwise fused to a single segment which is usually stubby-tipped but may be tapered into a point of varying abruptness. Early stages: larvae more or less onisciform, but may be rather parallel-sided or very slightly waisted; pupa girdled or reclining in ants' nests. Australian and Papuan, with very slight extension into S.E. Asia. Divided into 2 sections.

Lucia section

Males soberly coloured black or brown with limited blue areas or copper. Under surface with normal Lycaenine pattern complete and not ornamented with metallic or silvery markings Male fore tarsus pointed. Male genitalia (Text-fig. 27) with 2-pronged uncus and prominent Y-shaped juxta. Mainly Australian.

Included genera: *Lucia* Swainson, 1833; *Paralucia* Waterhouse & Turner, 1905; *Pseudodipsas* C. & R. Felder, 1860.

Hypochrysops section

Males usually brightly coloured blue, green, purple or coppery orange, rarely white or brown. Under surface almost always with pattern either more or less obsolete or rather distorted and ornamented with metallic silver or green markings. Male fore tarsus stubby-tipped or weakly pointed (except in *Titea*). Male genitalia (Text-fig. 28) with uncus not produced; juxta absent or reduced to a small semi-circular band.

Included genera: *Hypochrysops* C. & R. Felder, 1860; *Waigeum* Staudinger, 1895; *Philiris* Röber, 1891; *Parachrysops* Bethune-Baker, 1904; *Titea* gen. n. (p. 452).

Tribe **THECLINI** Swainson

Fore wing with 11 veins; veins 6 and 7 connate or stalked from apex of cell. Hind wing never with more than a single tail at vein 2. No secondary sexual characters. Eyes hairy or smooth. Antenna with cylindrical club; nudum extending down shaft, sometimes almost to base, in a taper or series of detached patches of decreasing size. Palpi with second joint almost always clothed with hair-like scales. Male fore tarsus exceptionally variable (see under sections). Male genitalia rather variable, but juxta always present, and also brachia except in *Austrozephyrus*. Early stages: larvae onisciform; pupa girdled, unless reclining or retaining larval skin. Mainly Sino-Himalayan with Palaearctic affinities, extending weakly into Nearctic Region and Sundaland.

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[7] See footnote 6 on p. 427.

Thecla section

Wing shape commonplace. Hind wing usually tailed or toothed at vein 2 and with a small tornal lobe, but tailless and lobeless in a few genera. Eyes smooth to densely hairy. Antenna with moderately well-defined club; segments number less than 40. Male fore tarsus segmented and clawed in 5 genera; in remainder fused to a single segment whose end varies from a tapered down-curved point to a blunt, slightly recurved tip. Male genitalia variable, especially in respect of uncus, which most often comprises the usual two lobes separated by a shallow depression (Text-figs 29, 30), but in some genera there are single or double processes (Text-fig. 31) sometimes of great length. A large section which might be further divided as in the three paragraphs below, corresponding to the three main branches of the phylogenetic tree figured by Shirôzu & Yamamoto (1956).

Included genera: *Artopoetes* Chapman, 1909; *Laeosopis* Rambur, 1858; *Thecla* Fabricius, 1807 (= *Zephyrus* Dalman, 1816; *Aurotis* Dalman, 1816; *Ruralis* Tutt, 1906); *Shirozua* Sibatani & Ito, 1942; *Cordelia* Shirôzu & Yamamoto, 1956; *Gonerilia* Shirôzu & Yamamoto, 1956; *Coreana* Tutt, 1907 (= *Bergmania* Bryk, 1946); *Ussuriana* Tutt, 1907.

Chaetoprocta de Nicéville, 1890; *Protantigius* Shirôzu & Yamamoto, 1956; *Leucantigius* Shirôzu & Murayama, 1951; *Ravenna* Shirôzu & Yamamoto, 1956; *Antigius* Sibatani & Ito, 1942; *Wagimo* Sibatani & Ito, 1942; *Araragi* Sibatani & Ito, 1942.

Japonica Tutt, 1907; *Hypaurotis* Scudder, 1876; *Habrodais* Scudder, 1876; *Euaspa* Moore, 1884; *Howarthia* Shirôzu & Yamamoto, 1956; *Teratozephyrus* Sibatani, 1946; *Esakiozephyrus* Shirôzu & Yamamoto, 1956; *Neozephyrus* Sibatani & Ito, 1942; *Chrysozephyrus* Shirôzu & Yamamoto, 1956; *Iratsume* Sibatani & Ito, 1942; *Favonius* Sibatani & Ito, 1942; *Quercusia* Verity, 1943; *Austrozephyrus* Howarth, 1957; *Dipsas* Westwood, 1851, invalid, praeocc.

Amblopala section

Wing shape abnormal; fore wing with apex weakly truncate; hind wing tailless but with tornus drawn into a very long lobe. Under surface aberrantly marked, with a whitish Y-band crossing the hind wing. Eyes smooth. Antenna rather short and stout with a moderately abrupt club; segments number about 40–42. Male fore tarsus fused to a single segment ending in an abruptly tapered point. Male genitalia (Text-fig. 32) commonplace.

Included genus: *Amblopala* Leech, 1893.

Tribe **ARHOPALINI** Bingham

Arhopalinae Bingham, 1907 : 284. Type-genus: *Arhopala* Boisduval, 1832.

Fore wing with 11 veins; veins 6 and 7 separate, latter from before end cell. Hind wing tailless or with up to three tails, that at vein 2 the longest. No secondary sexual characters, other than very occasional occurrence of faint visual brands due to increased density of underlying fuscous scales. Eyes smooth. Antenna with gradual, cylindrical club and nudum continuing in a taper down the shaft; segments number more than 40; shaft segments at most only a little longer than wide. Palpi clothed with appressed scales, third joint short. Male fore tarsus fused to a single segment, more or less stubby-tipped, but often slightly recurved and briefly and bluntly pointed (best seen in *Semanga*). Male genitalia commonplace, brachia and juxta always present. Early stages: larva more or less onisciform, rather flattened in *Arhopala* section and slightly shouldered in *Surendra*; pupa girdled. Oriental, with slight extension into the Palaearctic Region. Divided into 3 sections.

Arhopala section

Fore wing with vein 5 arising much closer to vein 6 than to vein 4. Hind wing tailless or, more often, tailed at vein 2; rarely an additional tail at vein 3 and in *Thaduka* at vein 1b also; never tailed at vein 4. Male genitalia (Text-fig. 33) with a prominent internal lateral ridge.

Included genera: *Arhopala* Boisduval, 1832; *Narathura* Moore, 1879; *Nilasera* Moore, 1881; *Panchala* Moore, 1882; *Satadra* Moore, 1884; *Darasana* Moore, 1884; *Acesina* Moore, 1884; *Aurea* Evans, 1957; *Thaduka* Moore, 1879; *Apporasa* Moore, 1884; *Mahathala* Moore, 1878; *Flos* Doherty, 1889.

Semanga section

Fore wing with veins 4, 5 and 6 more or less equidistant at their origins. Hind wing tailed at veins 2 and 3 in male and with a third tail at vein 4 in female. Male genitalia (Text-fig. 40) with a somewhat weaker lateral ridge than in *Arhopala* section.

Included genera: *Semanga* Distant, 1884; *Keraunogramma* Röber, 1887; *Mota* de Nicéville, 1890.

Surendra section

Fore wing venation as in *Semanga* section. Hind wing never tailed at veins 1b and 4. Male genitalia without a lateral ridge; valvae ventrally conjoined (as in *Deudorigini*) for at least half their length; subscaphium very strongly developed and fused to brachia in *Surendra*, but in *Zinaspa* (Text-fig. 39) the brachia are free.

Included genera: *Surendra* Moore, 1879; *Zinaspa* de Nicéville, 1890.

Tribe **OGYRINI** Waterhouse & Lyell **stat. n.**

Ogyrinae Waterhouse & Lyell, 1914 : 114. Type-genus: *Ogyris* Westwood, 1851.

Fore wing with 11 veins; veins 6 and 7 connate from apex of cell. Hind wing usually tailless, but termen often highly crenulate and bearing stout teeth, that at vein 2 being usually the most prominent; but occasionally a longer, stout tail may be present at vein 3 in males or 4 in females. No secondary sexual characters. Eyes smooth. Antenna with gradual, cylindrical club and tapered nudum extending down shaft almost to base, the lower part often as a series of detached patches; segments number about 45; shaft segments hardly wider than long. Palpi clothed with rather long appressed scales; third joint very short. Male fore tarsus fused to a single segment ending in a short down-turned point. Male genitalia (Text-fig. 34) with juxta and brachia. Early stages: larvae onisciform, always on Loranthaceae; pupae girdled, in crevice on or below ground. Australian, with weak extension into Papua.

Included genus: *Ogyris* Westwood, 1851.

Tribe **ZESIINI** Swinhoe **stat. n.**

Zesiusinae Swinhoe, 1911 : 153. Type-genus: *Zesius* Hübner, 1819.

Fore wing with 11 veins in female, but all 12 veins may be present in male; veins 6 and 7 connate or stalked from apex of cell. Hind wing tailed or prominently toothed at vein 2, sometimes with shorter tails or teeth at veins 1b and 3 also. No secondary sexual characters, other than a visual brand of contrastingly coloured scales in *Pseudalmenus*. Eyes smooth. Antenna with rather gradual, cylindrical club; nudum extending down shaft; segments number about 45; shaft segments less than twice as long as wide. Palpi variable (see under sections).

Male fore tarsus fused to a single segment ending in a down-curved point. Male genitalia with brachia and juxta. Early stages (based on *Zesius* and *Jalmenus*): larvae rather long and narrow, parallel-sided, dorsal line almost straight and bearing short conical teeth; pupa without (*Zesius*) or with (*Jalmenus* section) girdle. Oriental and Australian. Divided into 2 sections.

Zesius section

Fore wing with 12 veins in male. Hind wing with filamentous tails at veins 1b and 2 in male and at vein 3 also in female, that at vein 2 the longest. Palpi clothed appressed scales; third joint shorter than half second joint in male. Male genitalia (Text-fig. 38) with unusually large trough-like juxta. Single species confined to Peninsular India.

Included genus: *Zesius* Hübner, 1819.

Jalmenus section

Fore wing with 11 or 12 veins in male. Hind wing tailed or toothed at vein 2; further more or less prominent teeth may be present at veins 1b, 3 and 4; tail at vein 2 not filamentous, ciliate throughout on its lower side. Palpi with third joint very long (*Jalmenus*) to moderately short (*Pseudalmenus*); second joint clothed with some bristly scales (*Jalmenus*) or hairy (*Pseudalmenus*). Male genitalia (Text-figs 36, 37) rather variable. Australian.

Included genera: *Jalmenus* Hübner, 1818 (= *Austromyrina* C. & R. Felder, 1865); *Protialmenus* Waterhouse & Lyell, 1914; *Pseudalmenus* H. H. Druce, 1902.

Tribe **AMBLYPODIINI** Doherty **stat. n.**

Amblypodiinae Doherty, 1886 : 110. Type-genus: *Amblypodia* Horsfield, 1829.

Fore wing with 12 veins in males of *Amblypodia* and *Iraota*, otherwise 11 veins; vein 7 from well before end cell; veins 5 and 6 connate or nearly so from apex of cell (*Myrina*, *Iraota*) or close together; *Amblypodia* female aberrant in having vein 7 ending on termen. Hind wing always tailed at vein 1b, but in *Iraota* there may be a longer tail at vein 2 and a further tail at vein 3 in female. Secondary sexual characters absent or ill-defined (see p. 405). Eyes smooth. Antennae stout, with gradual, cylindrical club and nudum extending down shaft; segments number about 35 or less in *Myrina*, but over 45 in other genera; shaft segments short, at most barely longer than wide. Palpi, very large in *Myrina*, clothed appressed scales; third joint short. Male fore tarsus fused to a single stubby-tipped segment; in *Iraota* and *Amblypodia* abnormal in being spined on outer as well as inner surface and sides. Male genitalia (Text-figs 43, 45) with brachia and juxta; uncus trifid in *Myrina*. Early stages: larvae variable, not regularly onisciform; waisted (*Amblypodia*) or highest and widest at segment 4 (*Iraota*) or tuberculate (*Myrina*); pupae suspended or reclining without a girdle in *Amblypodia* and *Myrina*, but with a weak girdle in *Iraota*. Oriental and African.

Included genera: *Amblypodia* Horsfield, 1829 (= *Horsfieldia* Riley, 1922); *Iraota* Moore, 1881; *Myrina* Fabricius, 1807.

Tribe **CATAPAECILMATINI trib. n.**

Type-genus: *Catapaecilma* Butler, 1879.

Fore wing with 10 veins. Hind wing with at least three filamentous tails at veins 1b, 2 and 3 (a fourth tail at vein 4 in an unnamed Papuan species), that at vein 2 the longest. Under surface distinctive, with metallic silvery or nacreous markings; usual Lycaenine pattern distorted. Palpi hairy. Male fore tarsus fused to a single segment ending in a tapered, down-curved point. Secondary sexual characters, eyes, antennae, male genitalia and early stages—see under sections. Oriental. Divided into 2 sections.

Catapaecilma section

Secondary sexual characters present; in the typical species these comprise a slightly swollen subbasal portion of vein 1 of the fore wing clothed with small specialized scales (Text-fig. 124) resembling the androconia of Deudorigini and the same scales clothe most of the other fore wing veins less densely; in two species the swollen portion of vein 1 is clothed with short hairy scales (Pl. 3, figs 15, 16) and the other veins do not bear androconia. Eyes hairy. Antenna with moderately abrupt cylindrical club; nudum divided into rectangular blocks by bands of scales commencing half-way down the club and continuing down the shaft; segments number about 30–34; shaft segments about three times as long as wide. Legs very hairy. Male genitalia (Text-fig. 44) with brachia and juxta. Early stages larva more or less onisciform, rather broad and depressed; pupa without girdle, terminal segment not horseshoe-shaped (Bell, 1919 : 759–760.)

Included genus: *Catapaecilma* Butler, 1879.

Acupicta section

Hind wing with a 'false tornus' between veins 1b and 2, so that the true tornal lobe and tail at vein 1b appear to project from the dorsum. No secondary sexual characters. Eyes smooth. Antenna with nudum entire, extending in an unbroken taper down the shaft. Male genitalia (Text-fig. 47) without juxta; valvae small. Early stages unknown.

Included genus: *Acupicta* gen. n. (p. 451).

Tribe **OXYLIDINI trib. n.**

Type-genus: *Oxylides* Hübner, 1819.

Fore wing with 10 veins. Hind wing tailed at veins 1b, 2 and 3, that at 2 the longest. No secondary sexual characters. Eyes smooth. Antenna with moderately abrupt cylindrical club; nudum confined to club; segments number about 25; shaft segments about 3–4 times as long as wide. Palpi clothed with appressed scales. Male fore tarsus fused to a single segment ending in a tapered, down-curved point. Male genitalia (Text-fig. 46) peculiar, with position and apparent function of valvae and juxta interchanged. Early stages unknown. African.

Included genera: *Oxylides* Hübner, 1819; *Syrmoptera* Karsch, 1895.

Tribe **HYPOTHECLINI trib. n.**

Type-genus: *Hypothecla* Semper, 1890.

Fore wing with 10 veins. Hind wing tailed at vein 2 (figs in Seitz inexplicably show a non-existent tail at vein 1b), termen slightly stepped at vein 3, tornal lobe vestigial. No secondary sexual characters. Eyes smooth. Antenna with moderately abrupt cylindrical club; nudum confined to club; segments number about 35; shaft thin, segments about four times as long as wide. Palpi clothed with appressed scales; third joint shorter than half second joint. Male fore tarsus fused to a single segment ending in a tapered down-curved point. Male genitalia (Text-fig. 35) with brachia, rather small valvae and small U-shaped juxta. Early stages unknown. Papuan subregion and Wallacea (Philippines and Celebes).

Included genera: *Hypothecla* Semper, 1890; *Hypochlorosis* Röber, 1892 (= *Pseudonotis* H. H. Druce, 1894).

Tribe **LOXURINI** Swinhoe **stat. n.**

Loxurinae Swinhoe, 1910 : 11. Type-genus: *Loxura* Horsfield, 1829.

Fore wing with 10 or 11 veins; vein 7 from before end cell. Hind wing with dominant tail at vein 2; additional tails may be present at veins 1b and 3. Secondary sexual characters variable (see under sections); scent scales about the same size as ordinary scales; hair tufts for diffusing scent not present. Eyes smooth. Antenna with gradual to moderately gradual club and nudum extending in an unbroken taper down shaft; length, thickness and segmentation variable (see under sections). Palpi with third joint less than half second joint in males; second joint clothed appressed scales. Male fore tarsus fused to a stubby-tipped segment. Male genitalia rather variable, but brachia and juxta always present. Oriental. Divided into 3 sections.

Loxura section

Fore wing with veins 4, 5 and 6 more or less equidistant at their origins. Hind wing produced and tailed at vein 2 only in *Loxura* and *Yasoda*, but rounded and with additional short tails at veins 1b and 3 in *Eooxylides* and *Thamala*. No secondary sexual characters in *Loxura*, but present in remaining genera; in *Yasoda* a long scent brand in a groove of hind wing; in *Eooxylides* a discal brand on upper surface of fore wing; in *Thamala* a brand on the under surface of the fore wing above the dorsum. Antennae variable; short and stout in *Loxura* and *Yasoda* with about 33–37 segments; short and rather slender in *Eooxylides* with about 36 segments; long in *Thamala* with about 47 segments. Palpi unusually large in *Loxura* and *Yasoda*. Male genitalia (Text-figs 50, 51) characterized by broad, convex vinculum without a saccus; uncus incompletely divided, exdept in *Thamala*. Early stages: larvae waisted, smooth, feeding on monocotyledons; pupa suspended without a girdle (Morrell, 1956).

Included genera: *Loxura* Horsfield, 1829; *Yasoda* Doherty, 1889; *Eooxylides* Doherty, 1889 (= *Marshallia* Doherty, 1889; *Indoxylides* Doherty, 1889); *Thamala* Moore, 1879.

Neomyrina section

Fore wing with 11 veins; vein 5 close to vein 6 and remote from vein 4 at its origin (as in *Arhopala*). Hind wing with very long, broad tail at vein 2 and short tails at veins 1b and 3. No secondary sexual characters. Antenna much shorter than half fore wing costa, yet with about 50 segments. Male genitalia (Text-fig. 49) with dorsal structures much lighter than in *Loxura* section; vinculum narrow and nearly straight with well-developed saccus. Early stages unknown.

Included genus: *Neomyrina* Distant, 1884.

Drina section

Fore wing with 11 veins; veins 4, 5 and 6 more or less equidistant. Hind wing tailed only at vein 2. Secondary sexual characters usually present in blue species, but absent in brown species; brands strongly resemble the aberrant brands found in the *Uranothauma* and *Callictita* sections of Polyommatini, comprising a fore wing discal patch of densely packed scent scales (Text-fig. 130) mixed with specialized hair scales or streaks of scent scales along and between the fore wing veins. Antenna with about 45 segments. Male genitalia (Text-fig. 48) chiefly distinguished by very small dorsal structures and very long, narrow vinculum. Early stages unknown.

Included genus: *Drina* de Nicéville, 1890.

Tribe **HORAGINI** Swinhoe

Horaginae Swinhoe, 1910 : 11. Type-genus : *Horaga* Moore, 1881.

Fore wing with 10 veins. Hind wing with filamentous tails at veins 1b, 3 and 2, that at 2 the longest. Secondary sexual characters, when present, comprise small brands on the under surface of the fore wing. Eyes smooth. Antenna with moderately gradual, cylindrical club and nudum extending down shaft; segments number about 32–34; shaft segments about 1¼–1¾ times as long as wide. Palpi with third joint less than half second joint, clothed appressed scales. Male fore tarsus fused to a single stubby-tipped segment. Male genitalia (Text-fig. 52) disproportionately large; uncus comprises curious flattened or hollowed blades, which may be short or very long; brachia asymmetrical; juxta small; valvae simple. Early stages: larvae abnormal, waisted and highest about segment 5, furnished with 11 (*Horaga*) to 15 (*Rathinda*) long, fleshy, dorsal and lateral horns; pupa fixed rigidly by cremaster without a girdle head uppermost.

Included genera: *Horaga* Moore, 1881; *Rathinda* Moore, 1881 (= *Cupido* Hübner, 1819, praeocc.).

Tribe **CHERITRINI** Swinhoe

Cheritrinae Swinhoe, 1910 : 11. Type-genus: *Cheritra* Moore, 1881.

Fore wing with 10 or 11 veins, the number sometimes varying in individuals of the same species. Hind wing tailed at veins 1b and 2 (longest) with a short tail or tooth at vein 3. Secondary sexual characters often present and may comprise large, apparently visual brands on fore wing disc or apparent scent brands bearing specialized scales about the same size as ordinary scales on the upper surface of the hindwing and under surface of the fore wing; in *Cheritra* a small erectile hair tuft is present on the upper surface of the hind wing. Eyes smooth. Antenna with moderately gradual, cylindrical club and nudum extending down shaft; segments number about 37 to 47; shaft segments not more than twice as long as wide. Male fore tarsus fused to a single stubby-tipped segment. Male genitalia abnormal, uncus and tegumen modified, brachia absent. Early stages (based on *Cheritra* and *Drupadia*) : larva shaped as in Horagini, but bearing only six dorsal triangular protuberances; pupa without girdle, head uppermost in *Cheritra*. Oriental and African. Divided into 2 sections.

Cheritra section

Palpi clothed with appressed scales. Male genitalia (Text-fig. 42) either with uncus and tegumen fused into widely separated, more or less triangular plates or with uncus lobes produced into digitate processes separated from lateral process of tegumen by a reduced lateral window; valvae bearing a costal arm hinged to inner face of uncus/tegumen complex; saccus, if developed, continued ventrad of vinculum; juxta absent. Oriental.

Included genera: *Cheritra* Moore, 1881; *Ritra* de Nicéville, 1890; *Cheritrella* de Nicéville, 1887; *Ticherra* de Nicéville, 1887; *Drupadia* Moore, 1884 (= *Marmessus* Auctt. nec Hübner, 1819); *Biduanda* Distant, 1884; *Cowania* gen. n. (p. 450).

Dapidodigma section.

Palpi clothed with bristly as well as appressed scales. Male genitalia (Text-fig. 63) with a large, hood-like structure above the penis hinged to valvae and tegumen; juxta present, resembling an inverted furca. African.

Included genus: *Dapidodigma* Karsch, 1895.

Tribe **APHNAEINI** Distant

Aphnaria Distant, 1884 : 196. Type-genus: *Aphnaeus* Hübner, 1819.

Fore wing with 10, 11 or 12 veins; veins 6 and 7 connate or stalked from cell apex. Hind wing rarely tailless, usually with a tail at vein 1b and often a shorter tail at vein 2 also. Under surface with the usual Lycaenine pattern often strongly modified. No secondary sexual characters. Eyes smooth, except in *Aphnaeus* and *Paraphnaeus*. Antennae very variable; club always cylindrical, but may be abrupt or gradual; nudum confined to club or continued down shaft. Palpi variable. Male fore tarsus fused to a single segment ending in a tapered, down-curved point, except in *Aphnaeus* (in which it is almost stubby-tipped). Tarsal claws with a prominent endodont. Tibiae sometimes bear short, chitinous projections at tarsal joint. Male genitalia with juxta and brachia present. Early stages: larvae rather long and parallel-sided, with permanently raised basal rings sheathing the extrusible tubercles of the 11th segment; pupae very rarely girdled, but usually enclosed in some form of shelter or reclining. African and Oriental, with a slight extension into the Palaearctic Region. Divided into 2 sections.

Aphnaeus section

Under surface nearly always bearing metallic silvery, golden or nacreous spots or stripes on fore wing and often on hind wing also; some species bear superficial resemblance to 'Coppers'. Palpi normally developed, usually clothed with appressed scales but bearing long bristly scales in *Erikssonia*. Proboscis of average size. Male genitalia (Text-fig. 54) with normally articulating brachia; valvae united dorsally by a semi-membranous band above the penis.

Included genera: *Aphnaeus* Hübner, 1819 (= *Aphnaemorpha* de Nicéville, 1890); *Paraphnaeus* Thierry-Mieg, 1904; *Apharitis* Riley, 1925; *Cigaritis* Donzel, 1847 (= *Zerythis* Lucas, 1849); *Spindasis* Wallengren, 1857; *Lipaphnaeus* Aurivillius, 1916; *Chloroselas* Butler, 1886; *Zeritis* Boidsuval, 1836; *Desmolycaena* Trimen, 1898; *Axiocerces* Hübner, 1819 (= *Chrysorychia* Wallengren, 1857); *Phasis* Hübner, 1819 (= *Pseudocapys* Murray, 1935); *Aloeides* Hübner, 1819; *Poecilmitis* Butler, 1899; *Chrysoritis* Butler, 1898; *Crudaria* Wallengren, 1875; *Erikssonia* Trimen, 1891; *Nais* Swainson, 1833, invalid, praeocc.

Pseudaletis section

Fore wing rather large in comparison with hind wing. White or orange species, with the markings on the under surface without metallic ornamentation and tending to fade out. Palpi minute, much less than half length of head, clothed with appressed scales. Proboscis functional, but very short. Male genitalia (Text-fig. 41) with brachia reduced to short pointed processes inflexibly fused to lateral processes of tegumen; lateral window lacking. Female bears prominent tuft of specialized scales on abdomen.

Included genus: *Pseudaletis* H. H. Druce, 1888.

Tribe **IOLAINI** Riley

Iolaini Riley, 1956 : 285. Type-genus: *Iolaus* Hübner, 1819.

Fore wing with 10, 11 or, rarely in male only, 12 veins. Hind wing always tailed at veins 1b and 2 and occasionally at vein 3 also; tail at vein 1b dominant. Secondary sexual characters (see under sections) usually present. Eyes smooth, except in *Trichiolaus*. Antenna with cylindrical club; nudum and segmentation variable (see under sections). Palpi clothed with appressed scales; in male third joint less than half length of second joint, except in *Pseudiolaus*. Male fore tarsus and male genitalia variable (see under sections). Early stages: larvae waisted and shouldered about segments 5 and 6, feeding always on Loranthaceae; pupae attached by cremaster without girdle, usually more or less horizontal or head downwards, less commonly standing out rigidly at an angle from the support with head uppermost. Divided into 3 sections.

Iolaus section

Secondary sexual characters most commonly comprise a scent brand (Pl. 2, figs 10–12) below the costa on the upper surface of the hind wing associated with a hair brush on the fore wing dorsum, but a variety of other types occur; in *Creon* (Pl. 2, figs 7–9) there is a second, much smaller tuft on the fore wing dorsum composed of very large boat-shaped scales; in *Iolaus* the scent brand is on the under surface of the fore wing lying beneath the hair brush; in *Dacalana* and *Thrix* (of which *Virgarina* is a subjective synonym) there is a scent brand beneath an overlying hair brush on the fore wing disc, and in *Manto* (of which *Pseudomyrina* is a subjective synonym) a similar arrangement is found near the costal margin of the hind wing; in *Purlisa* there are scent brands on either side of the abdomen associated with hair fringes on the hind wing; in a number of species there are brands, possibly purely visual, on the fore wing disc. Antenna with nudum continued down shaft; segments about twice as long as wide or a little less. Male fore tarsus segmented and clawed in *Sukidion* and in the type-species of *Pratapa*, otherwise fused to a single stubby-tipped segment. Male genitalia (Text-figs 55–57), though showing an unusual degree of interspecific difference, are of more or less commonplace pattern, except in *Philiolaus* which has a pseudotergum; brachia present usually, but absent or vestigial in *Etesiolaus*, *Argiolaus* and some *Epamera* species; juxta always present. African and Oriental; African genera are listed in first paragraph and Oriental genera in the second.

Included genera: *Iolaus* Hübner, 1819; *Stugeta* H. H. Druce, 1891; *Pseudiolaus* Riley, 1928; *Trichiolaus* Aurivillius, 1898; *Tanuetheira* H. H. Druce, 1891; *Argiolaus* H. H. Druce, 1891; *Iolaphilus* Stempffer & Bennett, 1958; *Philiolaus* Stempffer & Bennett, 1958; *Aphniolaus* H. H. Druce, 1902; *Epamera* H. H. Druce, 1891; *Etesiolaus* Stempffer & Bennett, 1959.

Pratapa Moore, 1881; *Tajuria* Moore, 1881; *Dacalana* Moore, 1884; *Arrhenothrix* de Nicéville, 1890; *Maneca* de Nicéville, 1890; *Creon* de Nicéville, 1896; *Bullis* de Nicéville, 1897; *Sukidion* H. H. Druce, 1891; *Purlisa* Distant, 1881; *Jacoona* Distant, 1884; *Neocheritra* Distant, 1885; *Manto* de Nicéville, 1895; *Pseudomyrina* H. H. Druce, 1895; *Mantoides* H. H. Druce, 1896; *Thrix* Doherty, 1891; *Virgarina* H. H. Druce, 1895; *Charana* de Nicéville, 1890; *Suasa* de Nicéville, 1890; *Cophanta* Moore, 1884, *Ops* de Nicéville, 1895, and *Creusa* de Nicéville, 1896, invalid, praeocc.

Britomartis section

Single species superficially resembling *Iolaus* section in most characters. Secondary sexual characters comprise a large patch of loosely attached, (?) scent scales on fore wing disc. Antenna *Hypolycaena*-like, with short, abrupt club and nudum confined thereto; segments number about 32; shaft segments about three times as long as wide. Male fore tarsus as in *Iolaus* section. Male genitalia (Text-fig. 59) abnormal; armature small; valvae fused to vinculum; additional chitinous structures of a complicated nature within seventh and eighth sternites. Oriental.

Included genus: *Britomartis* de Nicéville, 1895.

Hemiolaus section

Secondary sexual characters comprise a scent brand beneath an overlying hair brush on the upper surface of the hind wing. Antenna like *Britomartis*. Palpi with third joint only slightly less than half the second joint. Male fore tarsus ending in a tapered, down-curved point. Male genitalia (Text-fig. 58) with abnormal juxta suggesting a transition to *Hypolycaena*. African, most strongly represented in Madagascar.

Included genus: *Hemiolaus* Aurivillius, 1923.

Tribe **REMELANINI trib. n.**

Type-genus: *Remelana* Moore, 1884.

Superficially resembling *Iolaus* section of Iolaini in wing shape, pattern, secondary sexual characters, antennae and male fore tarsus. Palpi with third joint as long as or longer than half second joint (as in *Hypolycaenini*), clothed with appressed scales. Eyes hairy or smooth. Male genitalia (Text-figs 61–63) much closer to pattern of Hypolycaenini and Deudorigini than to pattern of Iolaini; juxta absent or vestigial; penis long and thin; valvae ventrally conjoined or separate. Early stages (only known for *Ancema blanka* de Nicéville, **comb. n.**) resemble those of Hypolycaenini rather than Iolaini, except that food plant belongs to Loranthaceae; larva more or less onisciform; pupa girdled. Oriental.

Included genera: *Remelana* Moore, 1884; *Ancema* **nom. n.** pro *Camena* Hewitson, 1865, praeocc. by *Camena* Martens, 1860; *Pseudotajuria* gen. n. (p. 451).

Tribe **HYPOLYCAENINI** Swinhoe **stat. n.**

Hypolycaeninae Swinhoe, 1910 : 11. Type-genus: *Hypolycaena* C. & R. Felder, 1862.

Fore wing with 10 veins. Hind wing tailed at vein 1b, except in *Gonatomyrina* which has tornus produced, and also at vein 2, except in *Leptomyrina;* tail at vein 1b dominant and may be very long and ciliate on both sides. Secondary sexual characters not often present; in *Tatura* there is a narrow pouch lined with small scales on vein 1 of the fore wing overlaid by an erectile hair tuft and there is a further scent brand at the base of space 2; in '*Hypolycaena*' *liara* H. H. Druce and '*H.*' *naara* Hewitson there is a small round brand at the end of the fore wing cell bearing undersized, presumed scent scales (Pl. 3, fig. 13); in the species of the '*H*'. *phorbas* (Fabricius) group there is a larger but more obscure brand on the fore wing disc which may be part scent and part visual; obscure, opaque visual brands occur in a very few other species. Eyes hairy. Antenna with rather abrupt club, cylindrical except in the typical species of *Chliaria*; nudum usually confined to club, but sometimes continuing down shaft in a series of detached patches; segments number less than 40, frequently less than 30; shaft segments at least three times as long as wide. Palpi with third joint at least half as long as second joint, and usually longer; second joint clothed appressed scales. Male fore tarsus fused to a single segment ending in a tapered, down-curved point. Male genitalia (Text-fig. 60) with a strong internal lateral ridge, as in *Arhopala* section of Arhopalini; no juxta; valvae usually rather small and simple and may be ventrally conjoined for up to half their length. Early stages: larvae more or less onisciform; pupae girdled, except sometimes when sheltered or reclining. African and Oriental.

Included genera: *Hypolycaena* C. & R. Felder, 1862; *Chliaria* Moore, 1884; *Zeltus* de Nicéville, 1890; *Leptomyrina* Butler, 1898; *Gonatomyrina* Aurivillius, 1924; *Tatura* Butler, 1887 (subject to ruling by the International Commission on Zoological Nomenclature).

Tribe **DEUDORIGINI** Doherty

Deudoriginae Doherty, 1886 : 110. Type-genus: *Deudorix* Hewitson, 1863.

Fore wing with 11 veins, except in *Sithon* with 10; veins 11 and 12 touch or briefly anastomose in three genera. Hind wing tailed at vein 2, except in *Capys* section, and sometimes at vein 3 also; never tailed at vein 1b. Secondary sexual characters most often comprise a scent brand above the hind wing cell associated with a hair brush on the fore wing dorsum (much as in Iolaini); scent scales (Pl. 1, fig. 2 and Text-fig. 126) much smaller than ordinary scales. Additional scent brands may occur on fore wing or hind wing or even on the abdomen (*Pilodeudorix*) with associated hair brush on the hind wing. Eyes hairy. Antenna with cylindrical club, with nudum confined thereto or extending only a short distance down shaft; segmentation variable; segments number from about 44 (*Artipe*) to under 30; shaft segments from about twice to nearly four times as long as wide. Palpi clothed with appressed scales, except in *Pamela*. Male fore tarsus fused to a single segment ending in a tapered down-curved point. Male genitalia (Text-fig. 65) 'greyhound-shaped', with rather heavy dorsal structures, inclined vinculum and rather small valvae ventrally conjoined for part of their length; brachia present; no juxta; penis usually long and thin. Early stages: larva more or less onisciform; pupa girdled. African and Oriental, extending weakly into Palaearctic and Australian Regions. Divided into two sections.

Deudorix section

Fore wing with veins 6 and 7 separate, though sometimes very narrowly so, at their origins. Hind wing always tailed.

Included genera: *Deudorix* Hewitson, 1863; *Artipe* Boisduval, 1870 (= *Lehera* Moore, 1884); *Virachola* Moore, 1881; *Hypomyrina* H. H. Druce, 1891; *Actis* Karsch, 1895; *Kopelates* H. H. Druce, 1891; *Hypokopelates* H. H. Druce, 1891; *Pilodeudorix* H. H. Druce, 1891; *Diopetes* Karsch, 1895; *Sithon* Hübner, 1819; *Sinthusa* Moore, 1884; *Pseudochliaria* Tytler, 1915; *Araotes* Doherty, 1889, *Bindahara* Moore, 1881; *Rapala* Moore, 1881; *Hysudra* Moore, 1882; *Nadisepa* Moore, 1882; *Baspa* Moore, 1882; *Bidaspa* Moore, 1882; *Stilbon* Rothchild & Jordan, 1905; *Vadebra* Moore, 1884, invalid, praeocc.

Capys section

Fore wing with veins 6 and 7 stalked or, sometimes in *Capys*, connate from cell apex. Hind wing tailless but produced at tornus.

Included genera: *Capys* Hewitson, 1865 (= *Scoptes* Hübner, 1819, subject to ruling by the International Commission on Zoological Nomenclature); *Pamela* Hemming, 1935 (= *Listeria* de Nicéville, 1894, praeocc.).

Tribe **TOMARINI trib. n.**

[Thestoridi Tutt, 1907 : 86, 87. *Tomares* Rambur, 1840 was formerly incorrectly known as *Thestor* Hübner, [1819] because of an overlooked type-species designation for the latter genus].

Type-genus: *Tomares* Rambur, 1840.

Fore wing with 11 veins; veins 6 and 7 stalked. Hind wing tailless and tornal lobe vestigial. Secondary sexual characters comprise small scent brands on fore wing at cell apex and at base of veins 3 and 4; scent scales (Text-fig. 131) resemble those of Deudorigini. Eyes and palpi densely hairy. Antenna with well-formed club to which the nudum is confined; segments number about 32; shaft moderately stout and segments barely longer than wide. Male fore tarsus fused to a single segment ending in a tapered, down-curved point. Legs stout and hairy, with tibiae bearing large chitinous projections at tarsal joint. Male genitalia (Text-fig. 64) resemble those of Deudorigini. Early stages: larva onisciform; pupa girdled. Palaearctic.

Included genus: *Tomares* Hübner, 1840.

Tribe **EUMAEINI** Doubleday

Eumaeidae Doubleday, 1847 : 20. Type-genus: *Eumaeus* Hübner, 1819.

Fore wing with 10 veins; in other respects venation variable. Hind wing seldom tailless, usually tailed or toothed at vein 2 and often with a shorter tail or tooth at vein 3; never tailed or toothed at vein 1b. On under surface the normal Lycaenine pattern may be unrecognizable in some Neotropical genera. Secondary sexual characters usually present (see under sections). Eyes hairy (but sparsely so in some Neotropical genera, especially *Arawacus*). Antennae extremely variable; club usually cylindrical, but flattened in *Strymon* and a few related genera; nudum confined to club in Holarctic genera, but often continued down shaft in an unbroken taper or in a series of detached patches in Neotropical genera; segmentation very variable, ranging from about 45 to 23. Palpi variable; very small in *Brangas* and some Neotropical species; scaling may be smooth, bristly or hairy; third joint short. Proboscis often bearing short sensory hairs on its inner surface in Neotropical genera. Male fore tarsus segmented and clawed in *Theclopsis*, otherwise fused to a single stubby-tipped segment. Male genitalia (Text-figs 66, 68) often furnished with brush organs in Neotropical genera, otherwise remarkably homogeneous and broadly similar to those of Deudorigini and Tomarini. Early stages (very little known for Neotropical genera): larvae more or less onisciform; pupae girdled. Holarctic and Neotropical. An enormous tribe requiring exhaustive investigation before it can be satisfactorily subdivided using characters other than the male genitalia. Meantime provisionally divided into one large and one very small section, mainly on the basis of differences in the male fore tarsus.

Eumaeus section

Secondary sexual characters most commonly comprise a brand, which may be scent or visual or a combination of both types, at apex of fore wing cell; presumed scent scales (Pl. 1, figs 4, 5 and Text-figs 122, 123) smaller than ordinary scales; many other types of character may occur on fore wing or hind wing (see p. 388); hair brushes do not occur on fore wing dorsum (as in Deudorigini), but in *Heterosmaitia* there is a small erectile hair tuft on the hind wing and in *Allosmaitia* there is a tuft of curious, very long and basally swollen scales in the same place. Male fore tarsus more or less cylindrical and normally spined beneath. Genera are listed in two groups: first, those in which brush organs are not known to occur; secondly, those with brush organs (*Ipidecla* to *Eumaeus*).

Included genera: *Callophrys* Billberg, 1820 (= *Lycus* Hübner, 1819, praeocc.; *Licus* Hübner, 1823); *Mitoura* Scudder, 1872; *Incisalia* Scudder, 1872; *Erora* Scudder, 1872; *Callipsyche* Scudder, 1876; *Ahlbergia* Bryk, 1946 (= *Ginzia* Okano, 1947; *Satsuma* Murray, 1875, praeocc.); *Fixsenia* Tutt, 1907; *Nordmannia* Tutt, 1907; *Strymonidia* Tutt, 1908; *Satyrium* Scudder, 1876; *Chattendenia* Tutt, 1908 (= *Edwardsia* Tutt, 1907, praeocc.); *Thecliolia* Strand, 1910 (= *Felderia* Tutt, 1907, praeocc.); *Pseudothecla* Strand, 1910 (= *Erschoffia* Tutt, 1907, praeocc.); *Tuttiola* Strand, 1910 (= *Klugia* Tutt, 1907, praeocc.); *Superflua* Strand, 1910 (= *Kollaria* Tutt, 1907, praeocc.); *Neolycaena* de Nicéville, 1890; *Sandia* Clench & Ehrlich, 1960; *Xamia* Clench, 1961; *Cyanophrys* Clench, 1961; *Chlorostrymon* Clench, 1961; *Electrostrymon* Clench, 1961; *Euristrymon* Clench, 1961; *Hypostrymon* Clench, 1961; *Ministrymon* Clench, 1961; *Phaeostrymon* Clench, 1961; *Strymon* Hübner, 1818 (= *Callipareus* Scudder, 1872; *Uranotes* Scudder, 1876); *Callicista* Grote, 1873; *Calycopis* Scudder, 1876; *Dolymorpha* Holland, 1931; *Eupsyche* Scudder, 1876; *Panthiades* Hübner, 1819; *Parrhasius* Hübner, 1818; *Tmolus* Hübner, 1819; *Cycnus* Hübner, 1819; *Oenomaus* Hübner, 1819; *Olynthus* Hübner, 1819; *Thestius* Hübner, 1819; *Polyniphes* Kaye, 1904; *Iaspis* Kaye, 1904; *Siderus* Kaye, 1904; *Arawacus* Kaye, 1904; *Theclopsis* Godman & Salvin, 1887; *Nesiostrymon* Clench, 1964; *Allosmaitia* Clench, 1964; *Calystryma* Field, 1967; *Symbiopsis* Nicolay, 1971; *Argus* Gerhard, 1850, invalid, praeocc.; *Bakeria* Tutt, 1907, invalid, praeocc.

Ipidecla Dyar, 1916; *Theritas* Hübner, 1818; *Mithras* Hübner, 1819; *Atlides* Hübner, 1819; *Evenus* Hübner, 1819 (= *Endymion* Swainson, 1831); *Chalybs* Hübner, 1819; *Thereus* Hübner, 1819; *Arcas* Swainson, 1832; *Lamprospilus* Geyer, 1832; *Pseudolycaena* Wallengren, 1858; *Molus* Hübner, 1819; *Paiwarria* Kaye, 1904; *Rekoa* Kaye, 1904; *Macusia* Kaye, 1904; *Heterosmaitia* Clench, 1964; *Brangas* Hübner, 1819; *Theorema* Hewitson, 1865; *Eumaeus* Hübner, 1819 (= *Eumenia* Godart. 1824; *Eumaea* Geyer, 1834); *Eucharia* Boisduval, 1870, invalid, praeocc.

Trichonis section

Fore wing venation commonplace in *Trichonis*, but extremely abnormal in *Micandra* (Text-fig. 67). Hind wing tailless with rounded tornus, except in female of *Micandra*, which is tailed and lobed. Secondary sexual characters unlike those found in *Eumaeus* section, presumed scent scales not smaller than ordinary scales; in *Trichonis* there are large brands on under surface of fore wing and upper surface of hind wing bearing large specialized scales (Text-fig. 128); in *Micandra* there is a large brand on fore wing bearing two types of specialized scales (Text-fig. 127). Male fore tarsus short, stout, centrally swollen and spined only at tip. Male genitalia without brush organs.

Included genera: *Trichonis* Hewitson, 1865; *Micandra* Staudinger, 1888.

Subfamily **LYCAENINAE** Leach

Lycaenida Leach, 1815 : 129. Type-genus: *Lycaena* Fabricius, 1807.

Fore wing with 11 veins; veins 6 and 7 usually narrowly separated, but sometimes connate or with a short stalk. Hind wing tailed at vein 2 or tailless, tornus lobed or rounded. No secondary sexual characters. Eyes smooth. Antennae with well-formed club, more or less flattened beneath, to which the nudum is confined; shaft segments at least three times as long as wide. Palpi clothed with hairy or bristly scales. Proboscis with smooth shaft. Male fore tarsus fused to a single segment ending in a sharp or rounded point. Male genitalia (Text-fig. 69) with tegumen much reduced and uncus comprising long, digitate lobes; brachia, saccus and juxta strongly developed; penis generally long and thin, widely open on its dorsal surface for the reception of the ductus, supra- and subzonal portions subequal, in general recalling the Thecline penis. Early stages: egg usually a flattened dome with large indentations; larva onisciform; pupa girdled. Mainly Holarctic, but weakly represented in all other Regions (see footnote on p. 464). Divided into two sections.

Lycaena section

True 'Coppers' with Polyommatine-like markings on under surface. Male fore tarsus ending in a sharp, tapered, down-curved point.

Included genera: *Lycaena* Fabricius, 1807 (= *Migonitis* Sodovsky, 1837; *Lycia* Sodovsky, 1837; *Rumicia* Tutt, 1906); *Heodes* Dalman, 1816 (= *Chysoptera* Zincken, 1817); *Loweia* Tutt, 1906 (= *Palaeoloweia* Verity, 1943); *Hyrcanana* Bethune-Baker, 1914; *Helleia* Verity, 1943; *Palaeochrysophanus* Verity, 1943; *Sarthusia* Verity, 1943; *Phoenicurusia* Verity, 1943; *Thersamonia* Verity, 1919; *Tharsalea* Scudder, 1876; *Gaeides* Scudder, 1876; *Chalceria* Scudder, 1876; *Epidemia* Scudder, 1876; *Disparia* Verity, 1943, invalid, praeocc.

Heliophorus section

With Thecline-like markings beneath. Male fore tarsus ending in a blunt, rounded point.

Included genera: *Heliophorus* Geyer, 1832 (= *Ilerda* Doubleday, 1847); *Iophanus* Draudt, 1920.

Subfamily **POLYOMMATINAE** Swainson

Polyommatidae Swainson, 1827 : 187. Type-genus: *Polyommatus* Latreille, 1804.

Fore wing with 11 veins, except in *Neurellipes* and *Triclema* (Lycaenesthini) and *Cupidopsis* (Polyommatini); veins 6 and 7 separate at their origins, sometimes very narrowly so. Hind wing tornus rounded or with a vestigial lobe in a few genera; tailless or with a filamentous tail at vein 2 only. Eyes and palpi very variable. Antenna with well-defined club more or less flattened or hollowed beneath, except in *Niphanda* females; shaft segments not less than three times as long as wide. Proboscis with shaft smooth, except in *Callictita* (Polyommatini) which bears some short, fine sensory hairs on its inner surface; terminal sensory area usually very weakly developed. Male fore tarsus fused to a single segment and, except in Candalidini, ending in a tapered, down-curved point. Mid and hind tibiae with terminal spurs. Male genitalia moderately variable (see under sections). Early stages: egg flattened or depressed, usually widest in the middle and not wider at base than at top; larva onisciform; pupa girdled or reclining.

Tribe **LYCAENESTHINI** Toxopeus **stat. n.**

Lycaenesthinae Toxopeus, 1929 : 218. Type-genus: *Lycaenesthes* Moore, 1866.

Fore wing with veins 11 and 12 free or touching or briefly anastomosed. Hind wing tailless, but with cilia almost always elongated into tail-like tufts at veins 1b, 2 and 3. Secondary sexual characters absent, except for the presence of long plume scales (p. 407), believed not to be scent scales. Eyes usually hairy, but smooth in a few species of *Cupidesthes*. Antenna with club almost cylindrical in a few species; nudum confined to club. Male genitalia (Text-fig. 70) with uncus divided into separated lobes; brachia, juxta and saccus present; penis widely open on dorsal surface for reception of ductus, coecum developed, sub- and suprazonal portions subequal. African, with rather weak representation in Oriental Region.

Included genera: *Lycaenesthes* Moore, 1866; *Anthene* Doubleday, 1847; *Cupidesthes* Aurivillius, 1895; *Neurypexina* Bethune-Baker, 1910; *Neurellipes* Bethune-Baker, 1910; *Monile* Ungemach, 1932; *Triclema* Karsch, 1893.

Tribe **CANDALIDINI trib. n.**

Type-genus: *Candalides* Hübner, 1819.

Fore wing with veins 11 and 12 free. Hind wing tailless. On under surface there is a tendency for markings to become obsolete in a few species. Male secondary sexual characters comprise only dagger scales (Pl. 4, figs 23, 24 and Text-fig. 156), which may be concentrated into a 'trident mark' along the bases of veins 2, 3 and 4 and/or may spread over the wings in alternate rows with ordinary scales. Eyes smooth. Antenna with nudum interrupted by bands of scales to tip of club or nearly so. Male fore tarsus more or less stubby-tipped in majority of species, but occasionally tapered to a blunt, rounded point. Male genitalia (Text-figs 72, 73) flattened in profile; lobes of uncus well-separated; brachia distinctive in having a short bifurcation shortly before the tip, but the branch is long in one species of *Erina;* juxta present, small or large, and asymmetrical in the *margarita* species group of '*Holochila*'; saccus weakly developed or absent; penis widely open on the dorsal surface for reception of ductus, coecum barely developed. Early stages: larva onisciform; pupa distinctive with edges of abdomen flattened and upturned and with a single or double projection at head.

Included genera: *Candalides* Hübner, 1819; *Erina* Swainson, 1833 (= *Holochila* C. Felder, 1862); *Cyprotides* Tite, 1963; *Microscena* Tite, 1963; *Adaluma* Tindale, 1922; *Nesolycaena* Waterhouse & Lyell, 1905; *Zetona* Waterhouse, 1938; *Holochila* sensu auctt. nec C. Felder[8].

Tribe **NIPHANDINI trib. n.**

Type-genus: *Niphanda* Moore, 1875.

Fore wing with veins 11 and 12 free. Hind wing tailless. Secondary sexual characters comprise 'hieroglyphically-marked' scales (Pl. 4, figs 20–22 and Text-fig. 160) arranged in

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[8] It is understood that Couchman is renaming this genus.

alternate rows with ordinary scales. Eyes hairy. Antennae exhibit strong sexual dimorphism; club moderately abrupt in male, more or less flattened beneath and with nudum confined thereto; in female club gradually incrassate, cylindrical (but flattened at tip in *N. fusca* (Bremer & Grey)) and with nudum extending down shaft almost to base. Palpi clothed with appressed scales. Male genitalia (Text-fig. 71) with dorsal structures rather Thecline-like, only slightly excavate between lobes of uncus; penis widely open on dorsal surface for reception of ductus; valvae simple; juxta a short, broad Y; no saccus. Early stages (only for *N. fusca*): larva slightly abnormal, increasing in girth gradually as far as tenth segment, aphytophagous. Oriental and Eastern Palaearctic.

Included genus: *Niphanda* Moore, 1875.

Tribe **POLYOMMATINI** Swainson

Fore wing with veins 11 and 12 variable, may be free, touch or anastomose; in a few species vein 11 may arise from vein 10; in *Jamides* section an additional vein linking veins 11 and 12 occurs. Hind wing tailed or tailless. Secondary sexual characters comprise various types of specialized scales, of which battledore androconia (Pl. 5), arranged in alternate rows with ordinary scales, are much the most frequent; in *Uranothauma* and *Callictita* sections compact patches or streaks of specialized hair and short plume scales occur. Eyes variable. Antennae with nudum confined to club. Palpi variable. Male genitalia with undivided uncus in *Everes* section, otherwise divided (narrowly and imperfectly in *Azanus* section) into separated lobes; brachia usually present, but never bifurcate as in Candalidini; juxta usually furca-like, but occasionally reduced to a small plate or otherwise modified; saccus not or only very slightly developed, except in *Una* and *Petrelaea* sections; penis very variable, giving better section characters than other components of genitalia, frequently ornamented with complex cornuti or scobinate patches. Cosmopolitan.

I have to admit complete failure in my efforts to find a satisfactory basis for subdividing this very large tribe into a few major natural groups. I have therefore fallen back on naming no less than thirty 'sections', many of them of no more than subsection or even generic worth. Where one section appears to be particularly close to another I have said so in the diagnoses which follow. Where, as in the majority of cases, I am uncertain where a section's affinities lie I have made no comment.

Cupidopsis section

Fore wing with only 10 veins. Hind wing tailed or tailless. No secondary sexual characters. Male genitalia (Text-fig. 74): penis with ductus entering on dorsal surface, coecum developed; saccus weakly developed. African.

Included genus: *Cupidopsis* Karsch, 1895.

Una section

Fore wing with 11 veins, as in all succeeding sections; veins 11 and 12 anastomosed, as far as costa in *Una*. Hind wing tailless, with cilia elongate at tornus. No secondary sexual characters. Eyes and palpi intensely hairy. Male genitalia (Text-fig. 75) typically with brachia atrophied, but present in *Orthomiella*; penis long, with ductus entering cephalad or ventro-cephalad, sub- and suprazonal portions subequal; saccus moderately developed. Oriental. Appears to be fairly close to the next section.

Included genera: *Una* de Nicéville, 1890; *Orthomiella* de Nicéville, 1890.

Petrelaea section

Fore wing with veins 11 and 12 anastomosed. Hind wing tailless. Secondary sexual characters comprise paddle scales in *Petrelaea* (Text-fig. 148) or rather rectangular battledore scales with concave bases in *Pseudonacaduba* (Text-fig. 152). Eyes and palpi hairy. Male genitalia (Text-figs 76, 78): penis long, ductus entering on ventral surface, sub- and suprazonal portions subequal; saccus developed, strongly so in *Pseudonacaduba*. Oriental and African.

Included genera: *Petrelaea* Toxopeus, 1929; *Pseudonacaduba* Stempffer, 1943.

Nacaduba section

Fore wing with veins 11 and 12 anastomosed, in *Neolucia* as far as costa. Hind wing tailed or tailless. Battledore androconia usually present, but in *Erysichton lineata* (Murray) very long paddle scales occur. Eyes and palpi hairy. Male genitalia (Text-figs 77, 79) with brachia present in all genera except *Erysichton*; penis with ductus entering on dorsal surface, a short coecum usually present, suprazonal portion short and usually furnished with a single or double Chapman's process sometimes of great length. Oriental and Australian.

Included genera: *Nacaduba* Moore, 1881; *Prosotas* H. H. Druce, 1891; *Ionolyce* Toxopeus, 1929; *Catopyrops* Toxopeus, 1929; *Erysichton* Fruhstorfer, 1916; *Paraduba* Bethune-Baker, 1906; *Neolucia* Waterhouse & Turner, 1905; *Hypojamides* Riley, 1929 (included provisionally; female only seen).

Theclinesthes section

Superficially similar to *Nacaduba* section. Battledore scales (Text-fig. 159) commonplace, but may be enlarged basally. Male genitalia (Text-figs 92, 98) with broad to fairly broad vinculum; penis basally dilated and apically tapered with ductus entering cephalad. Papuan and Australian, appearing to form a link between *Nacaduba* and *Upolampes* sections, and also fairly closely related to *Danis* and *Callictita* sections.

Included genera: *Theclinesthes* Röber, 1891; *Thaumaina* Bethune-Baker, 1908; *Utica* Hewitson, 1865, invalid, praeocc.

Upolampes section

Fore wing with veins 10, 11 and 12 abnormal; veins 11 and 12 anastomosed or touching; in some species vein 10 arises from vein 11, in others vein 11 arises from vein 10; in *Pistoria* vein 11 is reduced to a short cross-vein between veins 10 and 12. Hind wing tailed or tailless. Pattern on under surface somewhat abnormal; usual markings often conjoined into black bars or bands, including sub-basal bands on one or both wings. Battledore scales (Text-fig. 151) resembling those found in *Pseudonacaduba* (*Petrelaea* section) occur only in *Upolampes*. Male genitalia (Text-figs 80–88) with brachia absent or vestigial; penis short and stout, with ductus entering cephalad, suprazonal portion short; valvae and juxta variable, both simple in *Upolampes* and *Discolampa*, but in other genera combining with anellus to form a complicated structure from which it is impossible to detach the penis without tearing the structure apart. Oriental.

Included genera: *Upolampes* Bethune-Baker, 1908; *Caleta* Fruhstorfer, 1922; *Pycnophallium* Toxopeus, 1929; *Discolampa* Toxopeus, 1929 (= *Ethion* Shirôzu & Saigusa, 1962); *Pistoria* Hemming, 1964 (= *Mambara* Bethune-Baker, 1908, praeocc.).

Danis section

Fore wing with veins 11 and 12 touching briefly. Hind wing tailed or tailless. Pattern of under surface always abnormal, usually with fuscous costal and terminal borders often ornamented with metallic silvery green markings and with all other markings obsolete; in one aberrant species, *Psychonotis purpurea* (H. H. Druce) **comb. n.,** the under surface is yellowish buff with obscure reddish brown markings. Battledore scales, absent in *Epimastidia*, resemble those of *Jamides* in *Danis* (Text-fig. 158) but in *Psychonotis* are commonplace (Text-fig. 154). Eyes hairy. Palpi hairy or bristly. Male genitalia (Text-fig. 94): penis with ductus entering cephalad, suprazonal portion rather short; in *Psychonotis* (Text-fig. 93) an apparently unique feature occurs: the upper part of the diaphragma bears a sclerotized band rather weakly connected to the apices of the furca-shaped juxta and to the lateral processes of the tegumen, so that the band and juxta form a ring surrounding, but well separated from, the penis. Papuan, extending weakly across Wallace's Line and into Australia.

Included genera: *Danis* Fabricius, 1807 (= *Thysonotis* Hübner, 1819; *Hadothera* Billberg, 1820; *Damis* Boisduval, 1832); *Psychonotis* Toxopeus, 1930; *Epimastidia* H. H. Druce, 1891.

Jamides section

Fore wing with the usual 11 veins and an additional short cross-vein linking veins 11 and 12, which are otherwise completely free of one another. Hind wing tailled or toothed. On the under surface the usual Lycaenine pattern is arranged in stripes, but in a few species of *Pepliphorus* the discal and basal markings are faded out and the pattern approaches that of *Danis*, with silvery green ornamentation sometimes present. In most species rather large battledore scales, with ribs converging as in a fan, are present, but in *Jamides cyta* (Boisduval) only paddle scales occur. Eyes hairy. Scaling of palpi variable. Male genitalia (Text-fig. 95): penis with ductus entering on dorsal surface, coecum quite well-developed, suprazonal portion short. Oriental, extending into Australian Region.

Included genera: *Jamides* Hübner, 1819; *Pepliphorus* Hübner, 1819 (= *Peplodyta* Toxopeus, 1929).

Catochrysops section

Fore wing with veins 11 and 12 touching briefly in *Catochrysops* but free in *Rysops*. Hind wing tailed. Battledore scales (Text-figs 139, 140) rectangular, with the pedicel tapered to a point where it is attached to the scale and consequently very easily broken off. Eyes and palpi hairy. Male genitalia (Text-figs 96, 97) with brachia present in *Catochrysops*, absent in *Rysops*; penis with ductus entering cephalad, suprazonal portion short. Oriental, with single relict species in Madagascar.

Included genera: *Catochrysops*, Boisduval, 1832; *Rysops* gen. n. (p. 452).

Lampides section

Fore wing with veins 6 and 7 free. Hind wing tailed. Androconia (Text-fig. 161) unique; in addition long plume scales are sufficiently dense to give a shadow on the wings. Eyes and palpi hairy. Male genitalia (Text-fig. 101): penis with ductus entering on dorsal surface, coecum barely developed, suprazonal portion short. Old World and Australia.

Included genus: *Lampides* Hübner, 1819 (= *Cosmolyce* Toxopeus, 1927; *Lampidella* Hemming, 1933).

Callictita section

Fore wing with veins 11 and 12 briefly anastomosed. Hind wing tailed and with a vestigial tornal lobe. Secondary sexual characters aberrant for tribe, comprising a large discal patch on fore wing densely clothed with a mixture of specialized hair scales and short plume scales. Eyes and palpi hairy. Proboscis bears inconspicuous, short sensory hairs on its inner surface- Male genitalia (Text-fig. 89) abnormal, particularly in respect of penis which bears a trough. like 'footstalk' and has the suprazonal portion long and tapered. Papuan. Bears a close superficial resemblance to the species of the next section, especially to *Uranothauma nubifer* (Trimen), and may well be related thereto despite marked differences in male genitalia.

Included genus: *Callictita* Bethune-Baker, 1908.

Uranothauma section

Superficially very similar to the preceding section in all respects, including pattern. Fore wing with veins 11 and 12 touching or briefly anastomosed. Hind wing tailed and with a vestigial lobe in some species. Secondary sexual characters typically similar to *Callictita*; in some species the brands comprise streaks between and along the fore wing veins bearing either specialized hair scales or a mixture of hair and short plume scales; in *U. antinorii* (Oberthür) scent scales (Text-fig. 157) intermediate in appearance between short plume scales and ordinary battledore scales are arranged in alternate rows with the ordinary scales, but in far greater numbers than usual on the fore wing though in the normal proportion on the hind wing; there are no scent scales in *Lycaena heritsia* Hewitson, a species usually misplaced in *Phlyaria*. Eyes and palpi hairy. Male genitalia typically (Text-figs 90, 100) commonplace; penis with ductus entering on the dorsal surface, coecum not developed, suprazonal portion short and blunt; in *U. nubifer* (Text-fig. 91) the genitalia differ considerably and the species should perhaps be included in a separate genus; the armature is more compact, the penis ends in a prominent Chapman's process and the juxta is abnormal in bearing two additional arms directed distad as well as the usual arms of the furca. African. Closely related to the next two sections.

Included genus: *Uranothauma* Butler, 1895.

Phlyaria section

Fore wing with veins 11 and 12 briefly anastomosed. Hind wing tailed. Pattern of under surface abnormal, white with yellowish wing bases, a black streak from base below fore wing cell, some small black costal and marginal spots and a black sub-basal spot astride vein 1a of hind wing. Androconia of commonplace battledore type. Eyes hairy. Palpi bristly. Male genitalia (Text-fig. 99) similar to *Uranothauma*, except that valvae are widely separated at their bases and juxta is shaped like three sides of a square. Single African species usually associated with *L. heritsia* (see above), but larvae are quite different (Jackson, 1937).

Included genus: *Phlyaria* Karsch, 1895.

Cacyreus section

Fore wing with veins 11 and 12 free. Hind wing tailed or tailless, with a vestigial lobe in *Cacyreus* and with cilia elongated at tornus in typical species of *Harpendyreus*. Androconia of commonplace battledore type. Eyes and palpi hairy. Male genitalia (Text-figs 102, 103) with uncus lobes bearing short to long tubercles; a sclerotized scaphium present in *Cacyreus*; penis generally similar to that of *Uranothauma*. African.

Included genera: *Cacyreus* Butler, 1898 (= *Hyreus* Hübner, 1819, praeocc.); *Harpendyreus* Heron, 1909.

Leptotes section

Fore wing with veins 11 and 12 free. Hind wing tailed. Battledore androconia of ordinary shape. Eyes and palpi hairy. Male genitalia (Text-fig. 105) with brachia sometimes spinose or dentate; penis with ductus entering cephalad, suprazonal portion short and bearing a prominent, bifid Chapman's process. Holotropical, extending narrowly into the Holarctic Region.

Included genera: *Leptotes* Scudder, 1876; *Syntarucoides* Kaye, 1904, *Cyclyrius* Butler, 1897; *Syntarucus* Butler, 1900 (= *Langia* Tutt, 1906).

Castalius section

Fore wing, veins 11 and 12 touch or anastomose. Hind wing tailed. Battledore scales, present only in *Tarucus*, of commonplace type. Eyes smooth. Palpi variable. Male genitalia (Text-fig. 104) very variable, especially among African species currently misplaced in *Castalius* (see Stempffer, 1967); penis, sometimes very small, with ductus entering cephalad, sub- and suprazonal portions subequal and the latter tapered, alulae present at zone; juxta variable, usually a furca bearing wide, curtain-like appendages (tectoria of Bethune-Baker) which enfold the penis, but may be reduced to a small lamella; valvae usually bearing large, internal spine-like processes (virgae excitatae of Bethune-Baker). African and Oriental, with slight extension into Palaearctic Region.

Included genera: *Castalius* Hübner, 1819; *Tarucus* Moore, 1881.

Zintha section

Fore wing with veins 11 and 12 free. Hind wing tailed. Pattern of under surface *Castalius* like. Battledore scales (Text-fig. 155) commonplace. Eyes smooth. Male genitalia (Text-fig. 107) quite unlike preceding section; brachia absent; vinculum broad and strongly convex; penis very curious, stout, ductus entering cephalad, sub- and suprazonal portions subequal with the latter divided into two separate processes, the upper wide and dentate, the lower narrow and more or less spatulate. Single African species.

Included genus: *Zintha* gen. n. (p. 453).

Zizeeria section

Fore wing with veins 11 and 12 touching. Hind wing tailless. Battledore scales (Text-figs 141, 143) rectangular, with their upper margins deeply concave in *Zizina*. Eyes smooth or hairy. Male genitalia (Text-fig. 106); penis with ductus entering on dorsal surface and with a short coecum; valvae bear tufts of long hairs, spines or other processes. African and Oriental, with slight extension into Palaearctic and Australian Regions. Probably fairly closely related to the next four sections.

Included genera: *Zizeeria* Chapman, 1910; *Zizina* Chapman, 1910; *Pseudozizeeria* Beuret, 1955.

Famegana section

Fore wing with veins 11 and 12 touching briefly. Hind wing tailless. All markings on under surface obsolete except for obscure submarginal series. Battledore scales (Text-fig. 153) commonplace. Eyes smooth. Palpi bristly. Male genitalia (Text-fig. 108) with dorsal structures heavy, uncus lobes ending in pointed processes, brachia stout and rather rigidly fixed to lateral processes of tegumen; penis widely open on dorsal surface, sub- and suprazonal portions subequal. Single Oriental and Australian species.

Included genus: *Famegana* gen. n. (p. 453).

Actizera section

Superficially similar to *Zizeeria* section, but veins 11 and 12 of fore wing are free. Battledore scales (Text-fig. 144), present in two out of three species, virtually indistinguishable from those of *Zizeeria*. Eyes smooth. Palpi hairy. Male genitalia (Text-figs 111, 112): penis with ductus entering ventro-cephalad; in two species the valvae bear short, transtilla-like costal processes directed inwards. African.

Included genus: *Actizera* Chapman, 1910.

Zizula section

Fore wing with veins 11 and 12 anastomosed to costa. Hind wing tailless. No androconia. Male genitalia (Text-fig. 110) very abnormal; penis short and stout with ductus entering ventro-cephalad, suprazonal portion divided into two tapered processes resembling a beak, subzonal portion with a short 'footstalk', valvae bifid and furnished with a very long, flexible rod-like process, a basal arm turned inwards and a tuft of long spines. Holotropical.

Included genus: *Zizula* Chapman, 1910.

Brephidium section

Fore wing with veins 11 and 12 anastomosed to costa, as in *Zizula* except that in *Oraidium* vein 11 arises from vein 10. Hind wing tailless. Battledore scales, present only in *Brephidium*, narrow in American species (Text-fig. 142), commonplace in African species. Eyes smooth. Palpi hairy. Male genitalia with highly abnormal dorsal structures of uncertain homology, lateral processes of tegumen bearing finger- or rod-like, hairy or spinous processes, also one (*Brephidium*) or two (*Oraidium*—Text-fig. 109) additional processes between uncus lobes; penis beak-like, as in *Zizula* but without a 'footstalk' in *Oraidium*; for further details see Stempffer (1967: Text-figs 218–221). Discontinuous and relict distribution in South Africa and Sonoran zone of Nearctic extending into northern part of Neotropical Region.

Included genera: *Brephidium* Scudder, 1876; *Oraidium* Bethune-Baker, 1914.

Everes section

Fore wing with veins 11 and 12 anastomosed briefly. Hind wing tailless or tailed. Battledore scales (absent in brown species) commonplace. Eyes smooth. Palpi hairy or bristly. Male genitalia (Text-fig. 116) with uncus not divided into separate lobes though weakly excavate in typical genera; brachia small; penis with sub- and suprazonal portions subequal, ductus entering cephalad; valvae often bear internal projections recalling the 'virgae excitatae' of *Castalius* section. Mainly Palaearctic, but extending into Oriental, Australian and Nearctic Regions. Rather closely related to next two sections.

Included genera: *Everes* Hübner, 1819 (= *Ununcula* van Eeeke, 1915); *Cupido* Schrank, 1801 (= *Zizera* Moore, 1881); *Tiora* Evans, 1912; *Bothrinia* Chapman, 1909 (= *Bothria* Chapman, 1908, praeocc.); *Tongeia* Tutt, 1908; *Shijimia* Matsumura, 1919; *Talicada* Moore, 1881; *Binghamia* Tutt, 1908 (based on misidentified type-species).

Pithecops section

Fore wing with veins 11 and 12 anastomosed, sometimes as far as costa. Hind wing tailless. No androconia. Eyes smooth. Palpi hairy. Male genitalia (Text-fig. 115) similar to *Everes* section except that uncus is broadly divided almost to its base. Oriental.

Included genus: *Pithecops* Horsfield, 1828; *Eupsychellus* Röber, 1891.

Azanus section

Fore wing with veins 11 and 12 anastomosed briefly. Hind wing tailless. Androconia of two rather abnormal types: long paddle scales (Text-fig. 149) and rather rectangular battledore scales with concave bases (Text-fig. 146) as in *Upolampes* and *Pseudonacaduba*. Eyes hairy. Palpi hairy or bristly. Male genitalia (Text-fig. 114) broadly resemble those of *Everes* section except that uncus is narrowly divided. African and Oriental.

Included genus: *Azanus* Moore, 1881.

Eicochrysops section

Fore wing with veins 11 and 12 free. Hind wing tailed or tailless. Battledore scales commonplace. Eyes smooth. Palpi bristly. Male genitalia (Text-fig. 113) distinguished by uncus bearing two lobes, the upper pair 'rolled up like a cornet' (Stempffer, 1967 : 237); penis rather small, with ductus entering dorso-cephalad. African.

Included genus: *Eicochrysops* Bethune-Baker, 1924.

Lycaenopsis section

Fore wing with veins 11 and 12 free. Hind wing tailless except for a short tail in one species. Battledore scales commonplace. Eyes and palpi smooth or hairy. Male genitalia with uncus lobes usually produced, sometimes to a stout spike, and turned inwards and downwards; brachia usually absent or vestigial; vinculum with a pronounced subtriangular extension directed cephalad; penis with ductus entering on dorsal surface, coecum more or less developed, sometimes, as in *Rhinelephas* (Text-fig. 117), of great length, suprazonal portion short, bearing a single Chapman's process of variable length. Oriental extending into Holarctic.

Included genera: *Lycaenopsis* C. & R. Felder, 1865; *Neopithecops* Distant, 1884; *Parapithecops* Moore, 1884; *Megisba* Moore, 1881; *Pathalia* Moore, 1884; *Arletta* Hemming, 1935 (= *Moorea* Toxopeus, 1927, praeocc.); *Celastrina* Tutt, 1906; *Notarthrinus* Chapman, 1908; *Acytolepis* Toxopeus, 1927; *Oreolyce* Toxopeus, 1927; *Monodontides* Toxopeus, 1927; *Akasinula* Toxopeus, 1928; *Ptox* Toxopeus, 1928; *Udara* Toxopeus, 1928; *Rhinelephas* Toxopeus, 1928; *Uranobothria* Toxopeus, 1928; *Parelodina* Bethune-Baker, 1904; *Vaga* Zimmerman, 1958; *Papua* Röber, 1892, invalid, praeocc.; *Cyaniriodes* Matsumura, 1919, invalid, praeocc.

Glaucopsyche section

Fore wing with veins 11 and 12 free. Hind wing tailless. Battledore scales commonplace. Eyes smooth or hairy. Palpi hairy or bristly. Male genitalia (Text-fig. 118) commonplace; penis with ductus entering dorso-cephalad or cephalad, no coecum, suprazonal portion short; in *Glaucopsyche* a small saccus directed ventrad. Holarctic, extending very weakly into Oriental Region.

Included genera: *Glaucopsyche* Scudder, 1872; *Phaedrotes* Scudder, 1876; *Scolitantides* Hübner, 1819; *Apelles* Hemming, 1931; *Philotes* Scudder, 1876; *Turanana* Bethune-Baker, 1916 (= *Turania* Bethune-Baker, 1914, praeocc.); *Palaeophilotes* Forster, 1938; *Praephilotes* Forster, 1938; *Pseudophilotes* Beuret, 1955; *Shijimiaeoides* Beuret, 1955; *Sinia* Forster, 1940; *Iolana* Bethune-Baker, 1914; *Maculinea* van Eecke, 1915; *Caerulea* Forster, 1938; *Phengaris* Doherty, 1891.

Euchrysops section

Fore wing with veins 11 and 12 free. Hind wing tailed or tailless. Battledore scales commonplace. Eyes smooth or hairy. Male genitalia (Text-fig. 119); penis with alulae at zone, ductus entering cephalad, sub- and suprazonal portions usually subequal, but latter may be rather short; juxta a furca with short arms. African, with very weak extension into Oriental and Australian Regions.

Included genera: *Euchrysops* Butler, 1900; *Lepidochrysops* Hedicke, 1923 (= *Neochrysops* Bethune-Baker, 1923, praeocc.); *Thermoniphas* Karsch, 1895; *Oboronia* Karsch, 1893; *Athysanota* Karsch, 1895.

Polyommatus section

Fore wing with veins 11 and 12 free. Hind wing tailless in Holarctic species but often tailed in tropical species. Battledore scales (Pl. 5, figs 25–30 and Text-figs 147, 150) commonplace, except in *Itylos* (Text-fig. 145) in which the outer margins are excavate or crenulate; in addition 'gelbe schuppe' (Text-fig. 150B) may be present. Eyes and palpi variable. Male genitalia (Text-figs 120, 121) with lobes of uncus more or less digitate and directed caudad; a suspensorium, comprising a pair of rather weakly sclerotized arms descending from the top of the inner faces of the lateral processes of the tegumen, is nearly always present; penis generally similar to that of the *Euchrysops* section, with alulae at the zone; in Neotropical species a sagum (p. 391) is nearly always present. Cosmopolitan.

Included genera: *Polyommatus* Latreille, 1804; *Plebejus* Kluk, 1802; *Lycaeides* Hübner, 1819; *Cyaniris* Dalman, 1816; *Nomiades* Hübner, 1819; *Aricia* R. L., 1817 (= *Gynomorphia* Verity, 1929); *Pseudoaricia* Beuret, 1959; *Kretania* Beuret, 1959; *Ultraaricia* Beuret, 1959; *Agriades* Hübner, 1819; *Vacciniina* Tutt, 1909; *Albulina* Tutt, 1909; *Bryna* Evans, 1912; *Meleageria* Sagarra, 1925; *Agrodiaetus* Hübner, 1822 (= *Hirsutina* Tutt, 1909); *Lysandra* Hemming, 1933 (= *Uranops* Hemming, 1929, praeocc.); *Plebicula* Higgins, 1969; *Eumedonia* Forster, 1938; *Plebulina* Nabokov, 1944; *Icaricia* Nabokov, 1944; *Chilades* Moore, 1881; *Edales* Swinhoe, 1910; *Luthrodes* H. H. Druce, 1895; *Freyeria* Courvoisier, 1920; *Hemiargus* Hübner, 1818; *Itylos* Draudt, 1921; *Pseudochrysops* Nabokov, 1945; *Cyclargus* Nabokov, 1945; *Echinargus* Nabokov, 1945; *Pseudolucia* Nabokov, 1945; *Paralycaeides* Nabokov, 1945; *Nabokovia* Hemming, 1960 (= *Pseudothecla* Nabokov, 1945, praeocc.); *Parachilades* Nabokov, 1945.

DESCRIPTIONS OF NEW GENERA

COWANIA gen. n.

Gender feminine. Type- and sole species: *Horaga achaja* Fruhstorfer, 1912.

Allied to *Drupadia* Moore, 1884, with which it agrees fairly closely in the shape of the fore wing and in lacking veins 8 and 9, in the smooth eyes, flat-scaled palpi and stubby-tipped male fore tarsus. Antenna with cylindrical club a little stouter and more abrupt than in *Drupadia*, with the tapered nudum extending a little over half way down the shaft. Hind wing rather different to *Drupadia*, without a tail or tooth at vein 3 though the termen is stepped there, a tail about 2·5 mm long at vein 1b with its inner edge ciliate and a longer filamentous tail about 4·0 mm long at vein 2 (exactly as in *Horaga*; in *Drupadia* this tail is longer, broader, ciliate on both sides and the vein is continued some distance down it). On the upper surface of the male hind wing there is a rather ill-defined subcostal black patch and there is a rather similar patch above the dorsum on the under surface of the fore wing, both patches being composed of scales which are not strongly modified and do not give the impression of being scent scales.

Male genitalia (Text-fig. 42) similar in structure to *Drupadia*, but comparatively about twice as large. Vinculum narrow, ending in a small saccus which is continued in the same plane downwards. Uncus and tegumen not differentiated, comprising large, widely separated, triangular processes with their apices twisted and ending in a small up-turned spoon and their bases fused to the vinculum as far as the saccus (in *Drupadia* the uncus-tegumen complex ends in long, gently curved, digitate processes). Brachia absent. Valvae large, triangular, ending in a down-curved hook, hinged to the extreme base of the vinculum and top of the saccus and also connected by a membrane at the end of a costal arm to the inner face of the uncus-tegumen complex. Juxta absent.

The genus is dedicated to my friend and old collecting companion Lt.-Col. C. F. Cowan, who first pointed out (1966*a* : 108) that the type-species was not a *Horaga*, but was structurally related to '*Marmessus*', a name generally misused in the past for *Drupadia* until Cowan (1966*b*) pointed out the error.

ACUPICTA gen. n.

Gender neuter. Type-species: *Catapoecilma* (sic) *delicatum* de Nicéville, 1887.

Nearest to *Catapaecilma* Butler, 1879, but differing in many respects. Eyes smooth (hairy in *Catapaecilma* though sparsely so in one species). Palpi hairy, third joint short. Antenna with gradual, cylindrical club; segments number about 37, those on the shaft being only a little longer than wide; shaft with white segmental bands on the upper surface; on the lower surface the nudum is continuous, but with its edges slightly indented at each segment, and reaches almost half-way to base in male and two-thirds to base in female; thereafter continuing in a few detached patches (in *Catapaecilma* the nudum is crossed by bands of scales which commence half-way down the club). Legs generally as in *Catapaecilma*, with male fore tarsus ending in a tapered, down-curved point. Wing shape and venation as in Text-fig. 47A, the most unusual feature being the false tornus between veins 1b and 2; hind wing typically with filamentous tails at veins 1b, 2 and 3, that at vein 2 being the longest, but in an unnamed species from the Papuan subregion there is a fourth short tail at vein 4. Upper surface powdery blue in both sexes with broad fuscous borders; under surface ochreous densely striated with brown and bearing a large number of small metallic silver streaks which are difficult to reconcile with the normal Lycaenid pattern. Male without secondary sexual characters (present in all species of *Catapaecilma*). Male genitalia (Text-fig. 47B, C) with the dorsal parts recalling those of *Catapaecilma*, but differing in lacking a juxta and in having comparatively smaller valvae and a larger penis.

Hypochrysops bubases Hewitson, 1875, only known to me by the female holotype, is provisionally placed in this new genus.

Catapaecilma should have been spelled *Catapoecilma* by its author, and some subsequent authors have used this spelling. However, under the *Code* this emendation is not justified. The name is clearly intended to describe the brocade-like under surface markings; *Acupicta* was suggested to me by Lt.-Col. C. F. Cowan as a very rough Latin equivalent.

PSEUDOTAJURIA gen. n.

Gender feminine. Type- and sole species: *Tajuria donatana* de Nicéville, 1888.

Nearest to *Ancema* nom. n. (see p. 438), of which it should possibly rank as a subgenus. It differs from *Ancema* as follows. Fore wing narrower and hind wing less produced. Fore wing with vein 7 relatively long, arising well before the end of the cell and remote from vein 6; vein 9 relatively short, arising well beyond the centre point of vein 7 (in *Ancema* vein 7 arises just before the apex of the cell and close to vein 6 whilst vein 9 is long, arising from vein 7 just before its centre point). The hind wing cell is half the breadth of the wing, the upper discocellular vein is much shorter than the lower and the latter is inclined basad so that it is nearly parallel to the termen (in *Ancema* the cell is less than half the wing, the upper and lower discocellular veins are equal and more or less in direct continuation of one another, so that the lower corner of the cell is very acute). The under surface pattern, yellow with green subtornal markings on the hind wing, is rather close to that of *Remelana*, whereas that of *Ancema*, with subtornal orange markings above tornal black spots, resembles that of many genera of Iolaini. No secondary sexual characters (present on all wings of *Ancema*). Eyes smooth (clothed with long hairs in the type species of *Ancema*, though smooth in *Ancema blanka* de Nicéville, a species tentatively included in *Ancema* because of the similarity of its male genitalia to the type-species despite considerable differences in venation and secondary sexual characters. Antenna with club a little more abrupt and nudum a little less extensive than in *Ancema*. Palpi with third joint slender and half the length of the second joint in both sexes (in *Ancema* the third joint is a little longer than half the second joint in the male and nearly as long as the second joint in the female). Male genitalia (Text-fig. 62) of a similar pattern to those of *Ancema* (Text-fig. 63), though differing in detail as follows: brachia longer and thinner, valvae basally conjoined for a shorter distance and with a much shorter lower process, penis shorter and stouter vinculum less inclined.

TITEA gen. n.

Gender feminine. Type-species: *Candalides sublutea* Bethune-Baker, 1906.

The type-species was included by Tite (1963) in *Philiris*, but it differs structurally from all but one of the other included species by possessing in the male a segmented and fully functional fore tarsus bearing twin claws. The male genitalia are also fairly distinctive in possessing valvae which are broadly united ventrally (Tite: fig. 68). Colour and pattern are also distinctive; on the upper surface the male is metallic blue or bluish green with broad black borders, and on the under surface both sexes are rich yellow or orange and unmarked except for a series of metallic silver submarginal dashes. In the type-species the female hardly differs externally from the male.

Clench (1955 : 269) pointed out long ago that a new genus was required for a new species near '*Candalides*' *sublutea*, and it is with his permission that I now describe this genus. Clench states (in litt.) that his species has since been identified as *Philiris caerulea* Tite, 1963, which is the only other species to be included in *Titea*. *P. caerulea* was described by Tite from a single male from the Rawlinson Mts. However it is of interest that there are in the British Museum (Natural History) two females from New Guinea with brown wings both bearing large orange patches and with the under surface paler and yellower but otherwise similar to *T. caerulea*. As one of them bears the same data as the holotype of *T. caerulea*, it seems likely that they will eventually prove to be females of this species.

The genus is dedicated to Mr G. E. Tite, lately on the staff of the British Museum (Natural History) in recognition of his outstanding contribution to our understanding of the very difficult 'omnibus' genus *Philiris* and in gratitude for many past kindnesses.

RYSOPS gen. n.

Gender feminine. Type-species: *Lycaena scintilla* Mabille, 1877.

Stempffer (1968 : 238, fig. 204) has already drawn attention to the unique characters of the type- and sole included species, and it is with his permission that I name this new genus. Aurivillius included the type-species in *Eicochrysops* Bethune-Baker, 1924, but I believe that it is most nearly related to *Catochrysops* Boisduval, 1832, to which it bears a striking resemblance both in its external pattern and in the very unusual structure of the male battledore androconia (Text-figs 139, 140), already discussed on p. 406. It also has generally similar eyes, palpi, antennae and legs, but differs in having veins 11 and 12 of the fore wing completely free, whereas they touch briefly in *Catochrysops*. The male genitalia (Text-fig. 96; also, in more detail, Stempffer, 1967 : fig. 204) do not closely resemble those of any other genus.

The name *Rysops* has no meaning, but is intended to suggest a relationship with *Catochrysops*.

FAMEGANA gen. n.

Gender masculine. Type- and sole species *Lycaena alsulus* Herrich-Schäffer, 1869.

The type-species has been placed by recent authors in *Zizina* or *Zizeeria*, with both of which it shares a general similarity in size, appearance and habits.

Eyes smooth (hairy in *Zizina*). Palpi with second joint clothed with bristly scales, third joint long, slender, acuminate. Venation commonplace, with veins 11 and 12 of the fore wing briefly touching, as in the *Zizeeria* section. Under surface of the wings unmarked except for the usual submarginal series, which may fade out in dry season forms. Male with commonplace battledore androconia (Text-fig. 153), unlike the rectangular androconia of the *Zizeeria* section (Text-figs 141, 143). Male genitalia (Text-fig. 108) unlike those of any other species known to me, the principal peculiarity being the very stout brachia which are hinged wholly to the lateral processes of the tegumen and are capable of only limited movement.

'Famegana' is the northern Queensland aboriginal word for 'small', and was suggested to me for this little species by Mr L. E. Couchman.

ZINTHA gen. n.

Gender feminine. Type- and sole species: *Lycaena hintza* Trimen, 1864.

The type-species has been included by recent authors in *Castalius*, itself an 'omnibus' genus requiring subdivision, where, as pointed out by Stempffer (1967 : 207), it has occupied a particularly anomalous position. In venation it differs from all '*Castalius*' species in having veins 11 and 12 of the fore wing completely free. Externally it differs from the usual black and white pattern in being plain blue on the upper surface in the male and in bearing battledore androconia (Text-fig. 155). Male genitalia (Text-fig. 107; also Stempffer, 1967: fig. 177, in which the penis is drawn upside down) vaguely recall the genitalia of the *Lycaenopsis* section by the absence of brachia and strongly curved vinculum, but the penis is of an unique shape.

As the male genitalia are so different to those of all the other species of the *Castalius* section which are known to me, I have placed *Zintha* in a section by itself.

List of new combinations resulting from the above descriptions:-

Cowania achaja (Fruhstorfer) **comb. n.**
Acupicta delicatum (de Nicéville) **comb. n.**
Acupicta bubases (Hewitson) **comb. n.**
Pseudotajuria donatana (de Nicéville) **comb. n.**
Titea sublutea (Bethune-Baker) **comb. n.**
Titea coerulea (Tite) **comb. n.**
Rysops scintilla (Mabille) **comb. n.**
Famegana alsulus (Herrich-Schäffer) **comb. n.**
Zintha hintza (Trimen) **comb. n.**

PHYLOGENY AND ZOOGEOGRAPHY

PHYLOGENY

In working out a suggested phylogeny of the butterflies the chief difficulty is uncertainty as to what was the primitive state of any character. A further difficulty lies in deciding the extent to which characters may have been secondarily modified or lost. For example, the abdominal brush organs in Liptenini and the Neotropical Eumaeini might be explained as secondary specializations which have evolved separately and by coincidence in these two rather widely separated groups (both morphologically and geographically), which on this account should be regarded as advanced. On the other hand, abdominal brush organs occur in a variety of forms in the butterfly family Danaidae and in a great many moths; so an alternative explanation of their presence is that they have evolved from an ancestral organ which was once present in all the Lepidoptera but which has since been entirely lost in most groups. If the latter explanation is correct, then on this account the Liptenini and Neotropical Eumaeini should be regarded as the most primitive Lycaenid groups.

In Table A I list 19 characters—mainly external and from a phylogenetic point of view probably not the most significant—with my opinion as to their primitive or specialized states. In Table B I consider each character in relation to my proposed classification into subfamilies and tribes, scoring each out of 10 with the exception of the male genitalia scored out of 20. It will be seen that all my groups contain, in varying proportions, a mixture of primitive and specialized characters. This was to be expected, and the tables are mainly of interest as indicating the broad degree of specialization which each group has undergone. The mixture of primitive and specialized characters does, however, serve to emphasize the difficulties inherent in basing phylogenies on single characters, as was attempted by Jordan (1898) using the antennae (see p. 377). The hypothetical family-tree in Text-fig. 1 has therefore been based partly on an intuitive evaluation of the selected diagnostic characters.

TABLE A

	CHARACTER	PRIMITIVE (a)	SPECIALIZED (b)
1	Male genitalia	All components present, relatively simple and of average development	One or more components absent or strongly modified or with additional components, *or* asymmetrical
2	Hind wing shape	Tailless and lobeless	Tailed and lobed
3	Number of fore wing veins	12 veins	10 or 11 veins
4	Veins 11 and 12 of fore wing	Free	Anastomosed or linked
5	Hind wing precostal vein	Present	Absent
6	Pattern	Normal Lycaenine	Strongly modified or mimetic
7	Eyes	Smooth	Hairy
8	Antennal club	Gradual and cylindrical	Abrupt, flattened or hollowed
9	Antennal nudum	Extending down shaft	Confined to club
10	Palpi	Average length, symmetrical	Very short, *or* long, *or* asymmetrical
11	Proboscis	Smooth, average length	With sensory hairs, *or* atrophied
12	Legs	Subcylindrical and of average development	Abnormal (e.g. swollen, flattened or bearing terminal projections on coxae or tibiae)
13	Male fore tarsus	Segmented and clawed	Fused to a single segment (stubby-tipped more specialized than pointed)
14	Tibial spurs	Present	Absent
15	Secondary sexual characters	Absent	Present
16	Androconial scales	Barely differing from ordinary scales	Strongly differentiated
17	Larva	Onisciform	Differently shaped
18	Larval foods	Feeding exclusively on green plants	Different diet (e.g. partly or wholly carnivorous, *or* feeding on lichen)
19	Pupa	Girdled or reclining	Ungirdled

TABLE B

Tribe	a/b	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Total
Pentilini	a	0	10	10	10	10	0	10	0	0	0	1	10	0	10	5	8	0	0	0	84
	b	20	0	0	0	0	10	0	10	10	10	9	0	10	0	5	2	10	10	10	116
Liptenini	a	10	10	9	8	4	0	10	3	5	9	1	9	0	10	2	5	0	0	0	95
	b	10	0	1	2	6	10	0	7	5	1	9	1	10	0	8	5	10	10	10	105
Poritiinae	a	10	10	4	0	5	4	8	9	10	10	1	10	0	10	3	2	0	10	0	106
	b	10	0	6	10	5	6	2	1	0	0	9	0	10	0	7	8	10	0	10	94
Liphyrinae	a	15	9	10	10	0	0	10	10	10	5	0	10	10	10	7	2	0	0	0	118
	b	5	1	0	0	10	10	0	0	0	5	10	0	0	0	3	8	10	10	10	82
Miletini	a	2	10	0	10	2	8	10	10	10	0	0	1	1	10	7	2	10	0	2	95
	b	18	0	10	0	8	2	0	0	0	10	10	9	9	0	3	8	0	10	8	105
Tarakini	a	5	10	0	10	0	4	10	8	5	4	0	3	2	10	10	10	10	0	0	101
	b	15	0	10	0	10	6	0	2	5	6	10	7	8	0	0	0	0	10	10	99
Spalgini	a	10	10	0	10	0	3	10	10	10	10	0	10	2	10	10	10	10	0	0	125
	b	10	0	10	0	10	7	0	0	0	0	10	0	8	0	0	0	0	10	10	75

Table B. *continued.*

Tribe	a/b	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Total
Lachnocnemini	a	10	10	0	10	0	8	5	10	10	10	0	10	10	10	10	10	10	0	0	133
	b	10	0	10	0	10	2	5	0	0	0	10	0	0	0	0	0	0	10	10	67
Curetinae	a	10	8	0	10	0	8	0	10	10	10	0	5	2	0	10	10	0	10	8	111
	b	10	2	10	0	10	2	10	0	0	0	10	5	8	10	0	0	10	0	2	89
Luciini	a	15	8	0	10	0	4	10	9	6	10	10	10	2	0	10	10	9	9	10	142
	b	5	2	10	0	10	6	0	1	4	0	0	0	8	10	0	0	1	1	0	58
Theclini	a	20	2	0	10	0	9	2	9	10	10	10	10	3	0	10	10	10	9	10	144
	b	0	8	10	0	10	1	8	1	0	0	0	0	7	10	0	0	0	1	0	56
Arhopalini	a	20	1	0	10	0	10	10	10	10	10	10	10	0	0	10	10	10	10	10	151
	b	0	9	10	0	10	0	0	0	0	0	0	0	10	10	0	0	0	0	0	49
Ogyrini	a	20	5	0	10	0	10	10	10	10	10	10	10	1	0	10	10	10	10	10	156
	b	0	5	10	0	10	0	0	0	0	0	0	0	9	10	0	0	0	0	0	44
Zesiini	a	20	0	2	10	0	10	10	10	10	8	10	10	1	0	10	10	9	8	5	143
	b	0	10	8	0	10	0	0	0	0	2	0	0	9	10	0	0	1	2	5	57
Amblypodiini	a	20	0	2	10	0	2	10	10	10	8	10	10	0	0	9	9	8	10	5	133
	b	0	10	8	0	10	8	0	0	0	2	0	0	10	10	1	1	2	0	5	67
Catapaecilmatini	a	15	0	0	10	0	2	3	10	7	10	10	10	1	0	3	1	8	10	0	100
	b	5	10	10	0	10	8	7	0	3	0	0	0	9	10	7	9	2	0	10	100
Oxylidini	a	5	0	0	10	0	10	10	10	0	10	10	10	1	0	10	10	–	–	–	96
	b	15	10	10	0	10	0	0	0	10	0	0	0	9	10	0	0	–	–	–	74
Hypotheclini	a	20	1	0	10	0	10	10	10	0	10	10	10	1	0	10	10	–	–	–	112
	b	0	9	10	0	10	0	0	0	10	0	0	0	9	10	0	0	–	–	–	58
Loxurini	a	20	0	0	10	0	9	10	10	10	8	10	10	0	0	4	5	3	8	0	117
	b	0	10	10	0	10	1	0	0	0	2	0	0	10	10	6	5	7	2	10	83
Horagini	a	8	0	0	10	0	7	10	10	10	10	10	10	0	0	4	7	2	9	0	107
	b	12	10	10	0	10	3	0	0	0	0	0	0	10	10	6	3	8	1	10	93
Cheritrini	a	2	0	0	10	0	7	10	10	10	10	10	10	0	0	4	7	3	9	0	102
	b	18	10	10	0	10	3	0	0	0	0	0	0	10	10	6	3	7	1	10	98
Aphnaeini	a	15	1	5	10	0	4	10	10	6	8	8	8	1	0	10	10	5	8	1	120
	b	5	9	5	0	10	6	0	0	4	2	2	2	9	10	0	0	5	2	9	80
Iolaini	a	18	0	1	9	0	9	9	10	9	10	10	10	2	0	3	7	3	9	0	119
	b	2	10	9	1	10	1	1	0	1	0	0	0	8	10	7	3	7	1	10	81
Remelanini	a	12	0	0	10	0	9	4	10	10	8	10	10	1	0	4	7	10	9	10	124
	b	8	10	10	0	10	1	6	0	0	2	0	0	9	10	6	3	0	1	0	76
Hypolycaenini	a	12	0	0	10	0	9	0	8	2	8	10	10	1	0	7	7	10	10	10	114
	b	8	10	10	0	10	1	10	2	8	2	0	0	9	10	3	3	0	0	0	86
Deudorigini	a	12	0	0	9	0	9	0	10	2	10	10	10	1	0	3	5	10	10	10	111
	b	8	10	10	1	10	1	10	0	8	0	0	0	9	10	7	5	0	0	0	89
Tomarini	a	12	8	0	10	0	8	0	10	0	10	10	0	1	0	4	5	10	10	10	108
	b	8	2	10	0	10	2	10	0	10	0	0	10	9	10	6	5	0	0	0	92
Eumaeini	a	12	1	0	10	0	4	0	8	5	9	7	9	1	1	2	6	10	10	10	105
	b	8	9	10	0	10	6	10	2	5	1	3	1	9	9	8	4	0	0	0	95
Lycaeninae	a	18	5	0	10	0	10	10	1	0	10	10	10	1	0	10	10	10	10	10	135
	b	2	5	10	0	10	0	0	9	10	0	0	0	9	10	0	0	0	0	0	65
Lycaenesthini	a	20	9	0	6	0	10	1	1	0	10	10	10	1	0	10	10	10	8	10	126
	b	0	1	10	4	10	0	9	9	10	0	0	0	9	10	0	0	0	2	0	74
Candalidini	a	18	10	0	10	0	9	10	1	5	10	10	10	2	0	2	0	9	10	10	124
	b	2	0	10	0	10	1	0	9	5	0	0	0	8	10	8	10	1	0	0	76
Niphandini	a	20	10	0	10	0	10	0	4	5	10	10	10	1	0	0	0	9	0	10	109
	b	0	0	10	0	10	0	10	6	5	0	0	0	9	10	10	10	1	10	0	91
Polyommatini	a	17	5	0	5	0	9	4	0	0	9	10	10	1	0	2	0	10	8	10	100
	b	3	5	10	5	10	1	6	10	10	1	0	0	9	10	8	10	0	2	0	100

The scoring of characters (out of 10, except male genitalia out of 20). Second column indicates (a) primitive, (b) specialized. The characters are numbered as in Table A. In the case of Oxylidini and Hypotheclini nothing is known of the early stages and characters 17–19 are not scored.

ZOOGEOGRAPHY

In the absence of all but the most meagre fossil record the zoogeography of the butterflies must be deduced from their present distribution, their present powers of dispersal and our still limited knowledge of palaeogeography.

In Table C I summarize the present distribution of the Lycaenid subfamilies and tribes and in Table D the distribution of the sections of the very large tribe Polyommatini. My delimitation of the Ethiopian, Neotropical and Nearctic Regions follows conventional lines. In the case of the Oriental Region, I accept the view of Gressitt (1956) who, using evidence mainly derived from the Coleoptera, considered

TABLE C

			Oriental					
Tribe	Ethiopian	Australian	Papuan	S.E. Asian	Sino-Himal.	Palaearctic	Nearctic	Neotropical
Liptenini	c							
Pentilini	c							
Poritiinae				c				
Liphyrinae	b	(a)	a	a				
Miletini	a		a	c				
Tarakini				a	a	a		
Spalgini	a			a			a	
Lachnocnemini	c							
Curetinae			a	b	b	a		
Luciini		c	c	a				
Theclini				a	c	c	a	
Arhopalini		(a)	c	c	b	a		
Ogyrini		b	a					
Zesiini		b		a				
Amblypodiini	b		a	b				
Catapaecilmatini			a	b				
Oxylidini	b							
Hypotheclini			a	a				
Loxurini				b				
Horagini			a	b	a			
Cheritrini	a			c				
Aphnaeini	c			b	b	b		
Iolaini	c			c	b	a		
Remelanini				b				
Hypolycaenini	c	(a)	a	b				
Deudorigini	c	(a)	b	c	b	a		
Tomarini						b		
Eumaeini					b	c	c	c
Lycaeninae	a	a(NZ)	a	a	b	c	b	a
Lycaenesthini	c	(a)	a	b				
Candalidini		b	b					
Niphandini				b	a	a		
Polyommatini	c	c	c	c	c	c	c	c

The distribution of Lycaenid tribes. a = 1–4 species, b = 5–20 species, c = more than 20 species. In the case of the Australian Region, groups are placed in brackets when all the component species are thought to have arrived since the start of the Pleistocene Period and are confined to Queensland and/or Northern Territory.

that it extended from the Yangtse Basin in the north to Ceylon and through the Malay Archipelago to the Cape York Peninsula of Australia and to the whole of Polynesia. Its butterfly fauna is decidedly mixed, so that it is best divided, albeit somewhat arbitrarily, into subregions. In doing so I have disregarded the Polynesian Subregion of Gressitt, since it is unimportant in considering the origin of the Lycaenidae, and have modified his other subregions. The S.E. Asian Subregion (sensu mihi) comprises virtually the whole of the Oriental Region in its traditional, restricted sense and extends from S.E. China to Ceylon and as far east as Weber's Line; its characteristic species are lowland or submontane in habit and appear to be centred in Sundaland. The Papuan Subregion lies east of Weber's Line. What I have elsewhere termed the Sino-Himalayan Subregion (Eliot, 1969) is a particularly

TABLE D

			Oriental					
Section	Ethiopian	Australian	Papuan	S.E. Asian	Sino-Himal.	Palaearctic	Nearctic	Neotropical
Cupidopsis	a							
Una				a	a			
Petrelaea	a		a	a				
Nacaduba		b	c	c				
Theclinesthes		b	a					
Danis		(a)	c	a				
Upolampes			b	b				
Jamides		(b)	b	c				
Catochrysops	a	(a)	b	a				
Lampides	a	a	a	a	a	a		
Callictita			a					
Uranothauma	b							
Cacyreus	b							
Leptotes	b	(a)	a	a		a	a	b
Phlyaria	a							
Castalius	c			b	a	a		
Zintha	a							
Famegana		a	a	a				
Zizeeria	a	a	a	a		a		
Actizera	a							
Zizula	a	a	a	a			a	a
Brephidium	a						a	a
Pithecops		(a)	a	a				
Azanus	b			a		a		
Everes		(a)	a	a	b	b	a	
Eicochrysops	b							
Euchrysops	c	(a)	a	a				
Glaucopsyche					a	c	b	
Lycaenopsis		(a)	c	c	b	a	a	
Polyommatus	b	(a)	a	b	b	c	b	c

The distribution of the sections of Polyommatini. a = 1–4 species, b = 5–20 species, c = more than 20 species. In the case of the Australian Region, groups are placed in brackets when all the component species are thought to have arrived since the start of the Pleistocene Period and are confined to Queensland and/or Northern Territory.

complex area which widely overlaps the S.E. Asian Subregion but at a higher average elevation. Its original centre probably lay in the area of S.E. Asia termed Cathaysia by du Toit (1937) and others. To-day it essentially comprises the upper basin of the Yangtse, but extends through the highlands of Yunnan, Indo-China and Burma and along the outer slopes of the Himalayas, with a few characteristic elements, such as *Heliophorus* (Lycaeninae) reaching, at a moderate elevation, as far east as Wallace's Line. The Palaearctic Region is clearly defined in its western half by the Sahara and the deserts of Central Asia, only a few African and Oriental species having invaded its southern fringes, but in its eastern half its boundary with the Sino-Himalayan Subregion is extremely blurred and in part altitudinal. The Australian Region includes the Cape York Peninsula, but I have placed in brackets those groups which in Australia are almost confined to Queensland and are likely to have arrived from the Oriental Region since the start of the Pleistocene Period.

The main factors affecting the dispersal of butterflies are availability of larval food plants (and ants in the case of the Lycaenidae) and the efficacy of different sorts of geographical barrier—climatic, water, desert. It would be easy to overemphasize the importance of larval food. Many Lycaenid larvae are polyphagous and in some cases the correct symbiotic ant appears to be of greater importance than the correct food plant (Bell, 1915); adaptations to new food plants and ants are probably frequent in the long term. In theory climatic barriers should also be surmountable in the long term, but in the Lycaenidae only a few existing groups have a wide climatic tolerance, so that climate must have played an important part in restricting past dispersals. Water gaps and deserts have probably been of still greater importance, particularly the latter, since desiccation must be one of the greatest dangers faced by a travelling butterfly. To cross wide water or desert gaps butterflies should ideally be large and tough, like the Monarch Butterfly, *Danaus plexippus* (L.), or very small and light so that they can the more easily be passively transported by winds, especially those of tropical typhoon force. No Lycaenid species comes within the first category and it is probably significant that those whose distribution is most easily explicable by trans-ocean dispersal, such as *Zizula*, are all small. Rafting of the early stages might occur, but probably only over short and calm water gaps. Few Lycaenidae show any strong migratory tendency; a notable exception is *Lampides boeticus* (L.), which is widely distributed in Eurasia, Africa and Australia, but has not succeeded in spreading to the New World. However the occurrence of weakly separated Lycaenid genera in oceanic islands, such as *Vaga* in the Bonin and Hawaian Islands and *Hypojamides* in Tahiti, proves that Lycaenidae do succeed occasionally in crossing very wide ocean gaps in which intervening islands provide only widely-spread stepping stones. But the poverty of island faunas also proves that such dispersal must be very rare, so that it is unlikely to have played an important role in evolution. On the other hand it is clear that mass dispersal can take place across short water gaps, as proved by the post-Miocene invasion of the Papuan Subregion, further discussed below, by butterflies of evident S.E. Asian origin along island chains which have never been continuous land. But even in this case the persistent, though rather narrow, deep water gaps represented by Wallace's and Weber's Lines have clearly acted as checks to spread and to gene interaction, so that speciation has been able to proceed on a large scale on either side. I conclude that any marked climatic barriers or wide water or desert gaps must have had a decisive effect in determining the evolution of the Lycaenidae, but that narrower gaps and island chains will have had little influence at generic and higher levels.

Fortunately the reality of continental drift has at last received general acceptance. Its bearing on the evolution of the butterflies can, however, only be assessed realistically if the approximate time they evolved as a suborder is known. Forbes (1932) dated this as far back as the Jurassic. Zeuner (1960) suggested the mid-Cretaceous; this date does not appear to have been challenged by later workers and is adopted for my suggested reconstruction of the history of the Lycaenidae. At that date the world-wide dispersal of the marsupials indicates that there can have been no ocean barrier capable of preventing the dispersal of butterflies to all continents, though other barriers, particularly climatic ones, may well have existed. However the break-up of Gondwanaland and Laurasia was already far advanced. The final separation of Africa and South America, in the region of Liberia and northern Brazil, is dated by Tarling & Tarling (1971) to −92 million years. These authors state that at this date India and the still-joined continents of Australia and Antarctica had already broken away from Africa, the first two lying far to the south of their present latitudes, whilst North America had separated from all the other continents. N.W. Africa may still have had some connection with S.W. Europe, but the Tethys Ocean separated the rest of Africa, as well as the southern continents, from Eurasia by a gap which widened progressively eastwards.

Table C shows that the Lycaenidae exist to-day in the greatest abundance and variety in the S.E. Asian Subregion of the Oriental Region, with Africa lagging only a little behind. The greater variety in the former may be due in part to its more complex geological history. In both regions the greatest wealth of species occurs in the tropical rain forest areas. The Lycaenidae are very poorly represented, in terms of the number of subfamilies, tribes and sections, in both Americas and, as will be shown later, their present Lycaenid fauna is clearly derived from the Old World. On the other hand the Riodinidae are extremely abundant and varied in the Neotropical Region, but are rather poorly represented in the Oriental Region, still more so in the Palaearctic and Ethiopian Regions and are absent from the Australian Region (sensu stricto). This distribution strongly suggests that the Lycaenoidea originated in the tropical areas of Gondwanaland and that the separation of South America from Africa resulted in the fundamental division of the superfamily into Riodinidae and Lycaenidae respectively. However this suggestion needs some qualification. The Lycaenid subfamilies Curetinae, Poritiinae and Lipteninae each share some separate characters with different groups within Riodinidae, especially in certain features of the male genitalia (I am indebted to Clench (in litt.) for drawing my attention to common features found in Lipteninae and some Neotropical Riodinidae). This suggests that all Riodinidae may not be descended from one single ancestor and all Lycaenidae from another; but rather that the evolution of Lycaenoidea may have proceeded far enough, before the break-up of Gondwanaland, for the superfamily tree to have begun to put out branches. These incipient branches, whose species would be barely separated from the original Lycaenoid ancestor, may have given rise to Riodinid groups in the New World and to Lycaenid groups in the Old, their distinctive family characters, such as the strongly atrophied male fore tarsus and grooved antenna of Riodinidae compared with the comparatively weakly degenerate fore tarsus and ungrooved antenna of Lycaenidae, having evolved subsequently by convergence in the New and Old World respectively. If this should be correct, then the fundamental division into Lycaenidae and Riodinidae, though convenient for taxonomic purposes, would reflect a false phylogenetic history.

Within the Old World the ancestral Lycaenid stock must have spread quickly from Africa into Eurasia without meeting any climatic check, since at that time S.W. Europe lay much further to the south than today and had a tropical climate. On the other hand it is not at all likely that this stock could have reached India, Australia or Antarctica because of the water and climatic barriers, even allowing for the fact that world climates were more equable than to-day. Subsequently the northward drift of Africa and western Eurasia, the climatic deterioration which apparently set in during the Tertiary, the development of the Sahara and the continuing barrier of Tethys must have led to the progressive isolation of the African Lycaenid fauna from that of Eurasia. Groups confined to tropical rain forest would have been isolated first, giving rise to such branchings as the Poritiinae in Eurasia and the Lipteninae in Africa. Other groups may have maintained intermittent contact for longer periods, but the individuality of much of the African Lycaenid fauna suggests isolation over a long period. Finally, India's northward drift, culminating in fusion with Eurasia during the Pliocene, reopened a route between Africa and S.E. Asia and allowed some interchange of their fauna. My impression, further discussed later, is that movement was mainly from Africa to Asia, and this movement is continuing to-day, though necessarily now confined to xerophile genera such as *Azanus*.

Within Eurasia the rotational movement which gave rise to the northward drift of western Europe and the accompanying climatic deterioration must have progressively forced into S.E. Asia all those groups which could not adapt to colder and drier conditions. Furthermore, an arm of Tethys extending broadly northward across Central Asia may have partially and intermittently subdivided the continent and given rise to separate eastern and western centres of development. Among the groups which became adapted to a temperate climate the Theclini, *Heliophorus* section of Lycaeninae and the *Everes* section of Polyommatini probably developed in the east and the Tomarini in the west, whilst the *Lycaena* section of Lycaeninae and the *Polyommatus* and *Glaucopsyche* sections of Polyommatini were probably more northern and holocontinental. I doubt whether the Pleistocene glaciations had much effect on the composition and distribution of the Palaearctic Lycaenidae at the generic level, but in the western part of the region the restriction of the fauna to separated refuge areas during the cold phases must have helped greatly to accelerate speciation.

As I have already stated, I think it unlikely that India had a Lycaenid fauna until its northward drift brought it close to, or even into contact with, Eurasia. This view agrees generally with that of Holloway (1969), who considered that the whole of its present butterfly fauna can be attributed to recent colonisation, mainly from S.E. Asia. Peninsular India has no endemic Lycaenid genera except the monobasic *Rathinda* and *Zesius*. *Rathinda* is only doubtfully distinct from the Oriental genus *Horaga* and is clearly derived from it. The case of *Zesius* is more interesting; its nearest relative is the Australian *Jalmenus*, and at first sight it is tempting to suppose that these may be two relict genera descended from a common Gondwanan ancestor. However, neither genus, in any of their characters, suggests a particularly ancient origin and I think it far more likely that both are descended from a common Oriental Miocene or post-Miocene ancestor whose descendants have died out in intervening areas. I possibly differ from Holloway in thinking that many of the present Lycaenidae of S.E. Asia are not old endemics but are derived from African invasions which came in across India in post-Miocene times and thereafter underwent secondary development in India as well as in Sundaland and in the Sino-Himalayan Subregion. The largest of these supposed African immigrant groups are the Thecline tribes Iolaini and Aphnaeini. The large majority of the Oriental members of both these tribes differ but little from their African relatives, so that long isolation seems out of the question. Moreover I think it highly significant that no member of either tribe has succeeded in crossing Weber's Line, despite being strong insects with considerable powers of dispersal, whereas the majority of the undoubtedly endemic S.E. Asian groups such as the Curetinae, the Thecline tribes Arhopalini, Horagini, Catapaecilmatini and many sections, such as *Nacaduba* and *Jamides*, of the comparatively weak-flying Polyommatini have reached the Papuan Subregion. Had the Iolaini and Aphnaeini been present in S.E. Asia in late Miocene times, when the Melanesian Arc started to emerge, I think it certain that they would be represented in the Papuan fauna to-day. Other groups and genera represented in S.E. Asia to-day, which I suspect are similarly derived from Africa, even though some of their component species have reached Australia, include Spalgini, Lycaenesthini and the Oriental species of the *Leptotes*, *Castalius*, *Azanus* and *Euchrysops* sections of Polyommatini.

The zoogeography of the Indo-Australian butterflies has been discussed by Holloway & Jardine (1968). They stated that there was evidence of extensive land connections between Australia and Asia in the late Cretaceous, when there was a more uniform climate, fauna and flora throughout, and dated the arrival from Asia of the endemic Australian butterflies to the early Tertiary. However, in a later paper Holloway (1970) points out that recent work on sea floor spreading and continental drift has shown that these Asian connections probably did not exist and that Australia, after splitting from Antartica in the early Tertiary, was isolated from all other land areas until its slow northward drift brought it into proximity with Papua during the late Pliocene. He suggests that some of the autochthonous butterflies, such as the Satyrid tribe Hypocistini, may have entered Australia from South America via Antarctica at the start of the Tertiary. Whatever the position may be in other butterfly families or insect orders,[9] a South American origin for any of the Australian Lycaenidae is out of the question and it is necessary to search for an alternative explanation for the evolution of the Australian 'endemics'. Solely on the basis of present distribution the group having the best claim to be of Australian origin is the Thecline tribe Ogyrini, which is almost confined to Australia proper, only two or three species occurring in New Guinea. Other possible endemics are the Candalidini and Luciini. Of the eight described genera in Candalidini six monobasic or small genera are confined to Australia, whilst in a seventh, *Erina*, one species has spread outside Australia to Sumba and New Guinea. The eighth genus, '*Holochila*' sensu auctt., is a large omnibus genus containing four species-groups each probably of at least subgeneric worth. The two smallest groups are as strongly represented in Australia as in New Guinea, whilst the other two have many more species in New Guinea; but as no species of '*Holochila*' has been found in the Moluccas, Bismarcks or Solomons this preponderance of New Guinea species could be attributed to secondary, explosive development in New Guinea in late Pliocene times when the single large island of to-day may have consisted of several smaller land areas. In the case of Luciini, the *Lucia* section is almost confined to Australia and may have evolved there; the more numerous *Hypochrysops* section, although quite well represented in Australia, is much more strongly represented in the Papuan Subregion, with representatives in all the outlying island groups (one species, *Hypochrysops coelisparsus* (Butler), has even reached continental Asia.) I think that the most likely explanation for the origin of all these groups lies in the belief of Zeuner (1943) and others that there was land a little to the north of the present position of New Guinea connected to Asia by island stepping stones at the start of the Tertiary. The ancestors of these groups may have reached this 'proto-Papua' from Asia at this time and become isolated there by the development of the deep geosyncline which submerged all the stepping stones. It is thought that the proto-Papua remained in existence until the mid-Miocene, when the present mountain ranges of New Guinea and the Melanesian Arc which connects them to S.E. Asia began to emerge. If the proto-Papua and the newly emergent New Guinea co-existed for a short time the butterfly fauna could have transferred from the one to the other and later on spread to Australia where, in the absence of competition, some explosive evolution may have taken place in the last few million years.

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[9] In the case of the older established insect orders there is a marked similarity between the faunas of Australia, New Zealand and Chile (Riek, 1970).

To-day's Papuan Lycaenid fauna, except in so far as ancient endemic elements may have survived in the area during the earth movements of the Miocene, as postulated above, must date from the raising of the Melanesian Arc, to be followed by the emergence of the Inner and Outer Banda Arcs. These routes would have allowed progressive invasion of Papua, and thence of Australia, by S.E. Asian elements. Amongst these Miocene and later arrivals in Papua, the ancestors of *Callictita* (Polyommatini) must have derived from stocks more widespread at that time but to-day surviving only in Africa in distantly related forms. Other characteristic Papuan groups, such as the *Danis* section of *Polyommatini*, probably evolved explosively in Papua from ancestors no longer identifiable or extinct in other areas. During the low sea levels of the Pleistocene the invasion of S.E. Asian butterflies must have continued at an increased rate, and many species confined in Australia to

N.E. Queensland must have arrived during this period. The reverse radiation of Papuan butterflies towards Asia has evidently been on a much smaller scale.

The most interesting and unexpected invaders of the Australian Region are the 'Coppers' (*Lycaena* section of Lycaeninae) to-day confined to New Zealand. It seems impossible to suppose that these have been long isolated since they show only slight differences, both in facies and male genitalia, from their Holarctic relatives. They possibly reached New Zealand during a low sea level phase of the Pleistocene when world climates were colder. They must, in any case, have crossed enormous water gaps, and the genus *Lycaena* (sensu lato) must at that time have had a wider distribution. To-day no Coppers survive nearer than the Himalayas unless, conceivably, some species linger undetected in the mountains of New Guinea or New Caledonia.[10]

I have already stated that the Lycaenid fauna of the New World is derived from the Old. This needs some further justification. Much the most abundant and characteristic New World group, both in North and South America, is the Thecline tribe Eumaeini. Because of the similarity of the male genitalia, of the arrangement of the hindwing tails and, to a lesser extent, of the androconial scent scales, this tribe must share a common ancestry with the Deudorigini and Tomarini of the Old World. All the Old World species, with the single exception of the monobasic *Sithon*, have eleven forewing veins, whilst every species of Eumaeini has only ten, suggesting that ten forewing veins were an ancestral character of the latter tribe. It is not possible to conceive that the Eumaeini gave rise to the Old World groups, since this would involve the reacquisition by the latter of a lost vein, and therefore the common ancestor of the three groups must have lived in the Old World. When and where the Eumaeini first developed can only be speculated upon. They are most abundant and varied in South America, suggesting that the original ancestor lived there, possibly having come in from Africa across the Atlantic early in the Tertiary at a time when the Atlantic gap was much narrower. Thence they could have radiated to North America by a further trans-ocean spread, or overland across the temporary isthmian land connection which Tarling & Tarling (1971) state existed some thirty to forty million years ago (but most authors, e.g. Darlington, 1965) seem to hold the view that South America was completely isolated from North America throughout the whole Tertiary until the present isthmian connection was established some three to four million years ago). Alternatively the original ancestor may have entered North America first via the Bering route, but I think this is much less likely. In any case the tribe shows so much diversity as to suggest that simultaneous development continued in both North and South America for a very long time, probably with regular interchange across the comparatively narrow water gap separating the two continents, culminating in the mass exchange which must have taken place when the present land connection was established. In addition, at a late stage in the tribal development (? Upper Pliocene onwards), many species adapted to a temperate or cold environment crossed into Eurasia by the Bering route, probably during a period of mutual interchange which brought into North America from Asia the Lycaeninae, the ancestors of the Thecline genera *Hypaurotis* and *Habrodais* and the *Polyommatus* (part), *Glaucopsyche*, *Everes* and *Lycaenopsis* sections of the Polyommatini. The present Eurasian species of Eumaeini show very slight differences from their Nearctic relatives, and the tribe has been present in the Old World for too short a time to adapt to a tropical climate or to spread outside the Palaearctic Region and the Sino-Himalayan Subregion of the Oriental Region.

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[10] Dr Sibatani (pers. comm.) has told me that he has discovered, in the highlands of New Guinea, between 8500′ and 9500′, the existence of an apparently new genus of Lycaeninae containing at least two species, which, in appearance, recalls the Neotropical genus *Iophanus*. I am grateful to Dr Sibatani for allowing me to give advance notice of his very interesting discovery.

The other major endemic New World group comprises that part of the *Polyommatus* section containing *Hemiargus* and related Neotropical and Sonoran genera. These are more specialized than the Old World genera, having acquired the bizarre character of a sagum. This character cannot, I think, have evolved in the short period elapsing since the supposed late Pliocene Eurasian/American interchange, and I think the original ancestor of this group of genera probably reached the New World as early as the mid-Tertiary. As most of the component species are adapted to a temperate climate, it is more likely that the ancestral stock entered via the Bering route than across the Atlantic. Of the remaining New World groups, *Feniseca* (Spalgini) and *Brephidium*, *Leptotes* and *Zizula* (Polyommatini) may have arrived by waif dispersal across the Atlantic from Africa, a method already suggested by Clench (1963) for *Brephidium* and *Leptotes*, though he thinks the Bering route a more likely alternative for *Zizula*. As *Feniseca* is quite strongly differentiated from its nearest African relatives, I think its arrival in the New World must have occurred a very long time ago, perhaps not later than the mid-Tertiary. The American species of *Brephidium* are less strongly differentiated, but apart from some genitalic differences their androconial scent scales are quite distinct, so that their arrival can hardly have been very recent. The other two genera probably arrived much later.

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NOTES ON THE PLATES AND TEXT-FIGURES

All the scanning electron micrographs were taken by Mr R. I. Vane-Wright, other than Pl. 4, fig. 19, taken by Mr B. S. Martin, from a specimen prepared by Miss Penny Duttson. The plates were prepared by Mr R. L. Smiles, from prints made by Mr Roger Freeman. The published micrographs represent only a small part of those taken; for the convenience of later workers the negatives permanently stored in Electron Microscope Unit of the British (Museum (Natural History) are listed below:

Species	*Negative numbers*
Anthene liodes	E7/342–356
Catapaecilma major	E7/357–361; E8/215–225
Creon cleobis	E7/155–172; E8/226–227; E8/241–245, 247–248
Cyprotides cyprotus	E9/232; E9/266–267
Freyeria trochylus	E7/338–341(♀); E8/249–251 (♂)
Hewitsonia boisduvalii	E7/177–189
Hypolycaena liara	E9/121–123
Liptena tullia	E9/225–227
Miletus chinensis	E5/624–634
Niphanda tessellata	E8/252–254; E8/265–268
Polyommatus icarus	E8/211–214; E8/264; E9/260–265
Rapala iarbas	E5/635–645
Thecla bitias	E8/255–263

The text-figures are drawn freehand, and no claim is made to great accuracy or artistic merit. For the purpose of this work neither is needed, in the case of the male genitalia the aim being merely to show the general pattern. Magnification is not constant, some genitalia diagrams having been drawn for convenience at a relatively high or low magnification, but the figures of scales (Text-figs 122–162) are roughly at the same magnification. In nearly all cases only the nearer half of the genitalia has been drawn, but in a few cases (e.g. Text-fig. 6) the complete armature has been drawn; in such cases the more distant half of the armature is drawn in thinner lines. The following abbreviations have been used:-

a = alula
b = brachium
ba = basal arm
c = coecum
ca = costal arm
cor = cornutus
cp = Chapman's process
cpl = central plate
crs = crescent-shaped sclerite
di = diaphragma
du = ductus seminalis
f = flail

hs = hood-like structure
j = juxta
l = labile
lpt = lateral process of tegumen
lr = lateral ridge
lw = lateral window
p = penis
pd = point at which lobes of uncus, valvae, or saccus divide
ped = pedicel
sa = saccus
sag = sagum
sb = sclerotized band
sbz = subzonal portion of penis
sc = scaphium
sh = sheath
sl = sacculus
sp = special process
spz = suprazonal portion of penis
ss = subscaphium
sus = suspensorium
t = tubercle
tm = transverse membrane
trs = transtilla
tsh = tergal-sternal hinge
v = valva
vi = vinculum
ul = lobes of uncus
x = X-piece
z = zone

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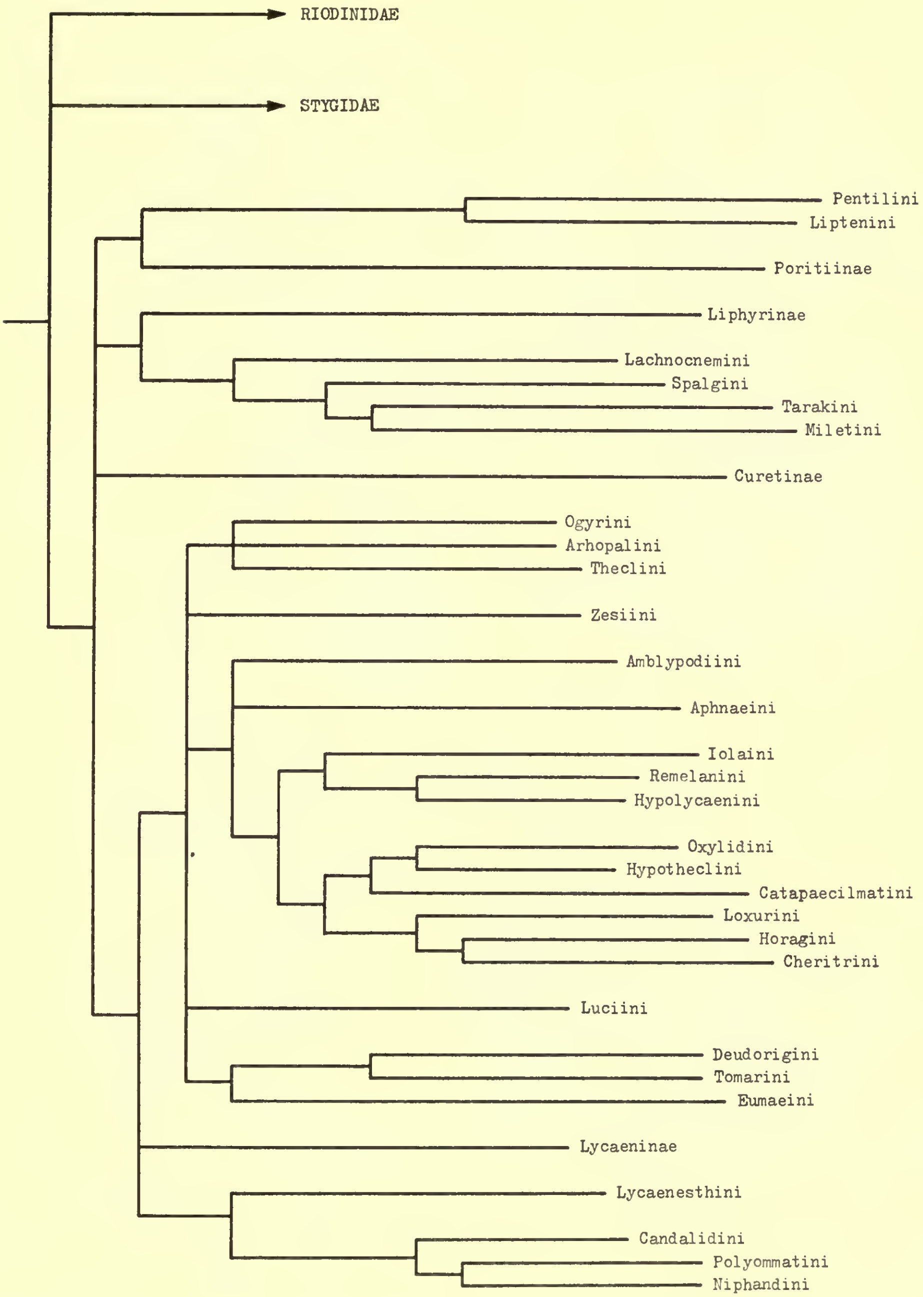
[11] Since completing Text-fig. 1 I have changed my views concerning the status of Aphnaeini, and consider that this tribe must rank as a major division of Theclinae, approximately coequal in status to all the other tribes lumped together. My reasons are:-

a) The musculature of the male genitalia differs from that of the remainder of the subfamily, which shares a common pattern with Lycaeninae and Polyommatinae (Sibatani, pers. comm.).
b) As well as the distinctive features of the early stages, already discussed (p. 412), it is apparent that the head of the adult larva is comparatively large and, usually, not, or only a little, retracted (Clark & Dickson, 1971: pls. 75–94).
c) Alone in Theclinae all twelve fore wing veins are frequently present *in both sexes*.
d) The exceptionally prominent endodont in the tarsal claw.


RIODINIDAE
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Ogyrini
Arhopalini
Theclini
Zesiini
Amblypodiini
Aphnaeini
Iolaini
Remelanini
Hypolycaenini
Oxylidini
Hypotheclini
Catapaecilmatini
Loxurini
Horagini
Cheritrini
Luciini
Deudorigini
Tomarini
Eumaeini
Lycaeninae
Lycaenesthini
Candalidini
Polyommatini
Niphandini

FIG. 1. The phylogeny of the Lycaenidae. The extent of the horizontal lines towards the right indicates the approximate degree of specialization.[11]

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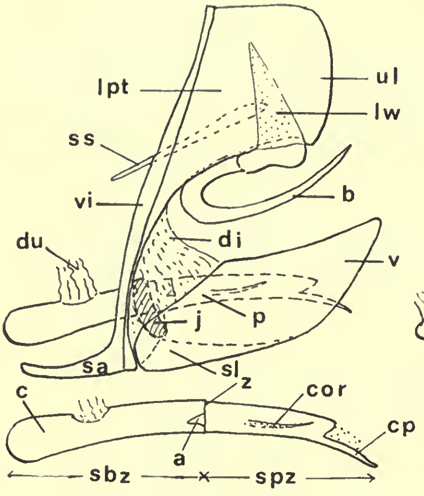
[11] See Footnote on opposite page.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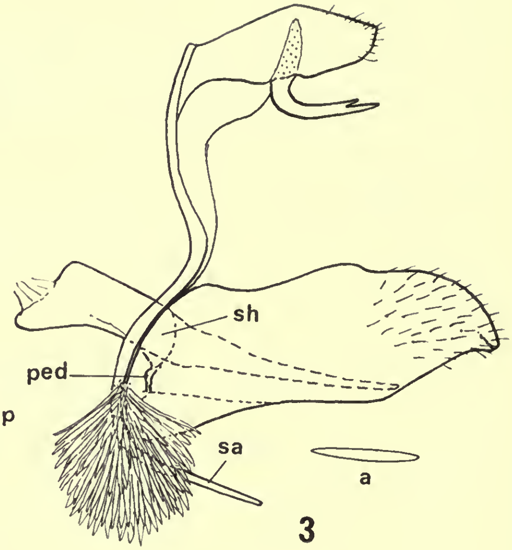

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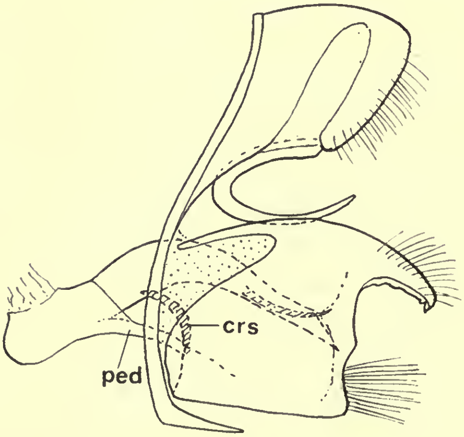

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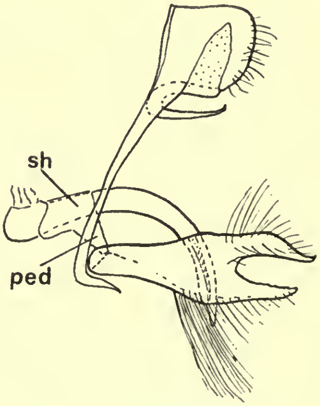

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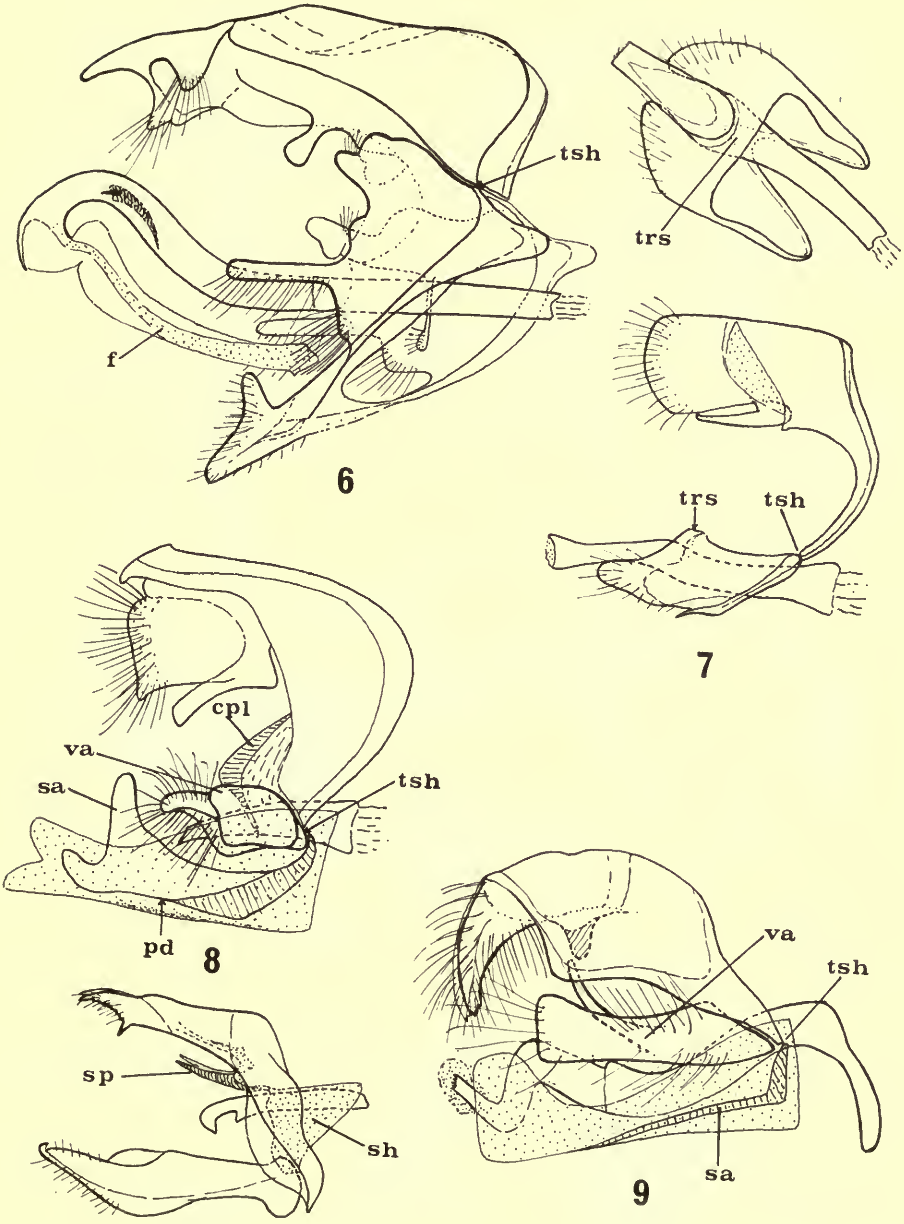
FIGS 2–5. Male genitalia. 2. Notional species to illustrate most of the terms used for the components of the male genitalia. 3. *Liptena despecta* (Holland). 4. *Deramas livens* Distant. 5. *Cyaniriodes libna* (Hewitson).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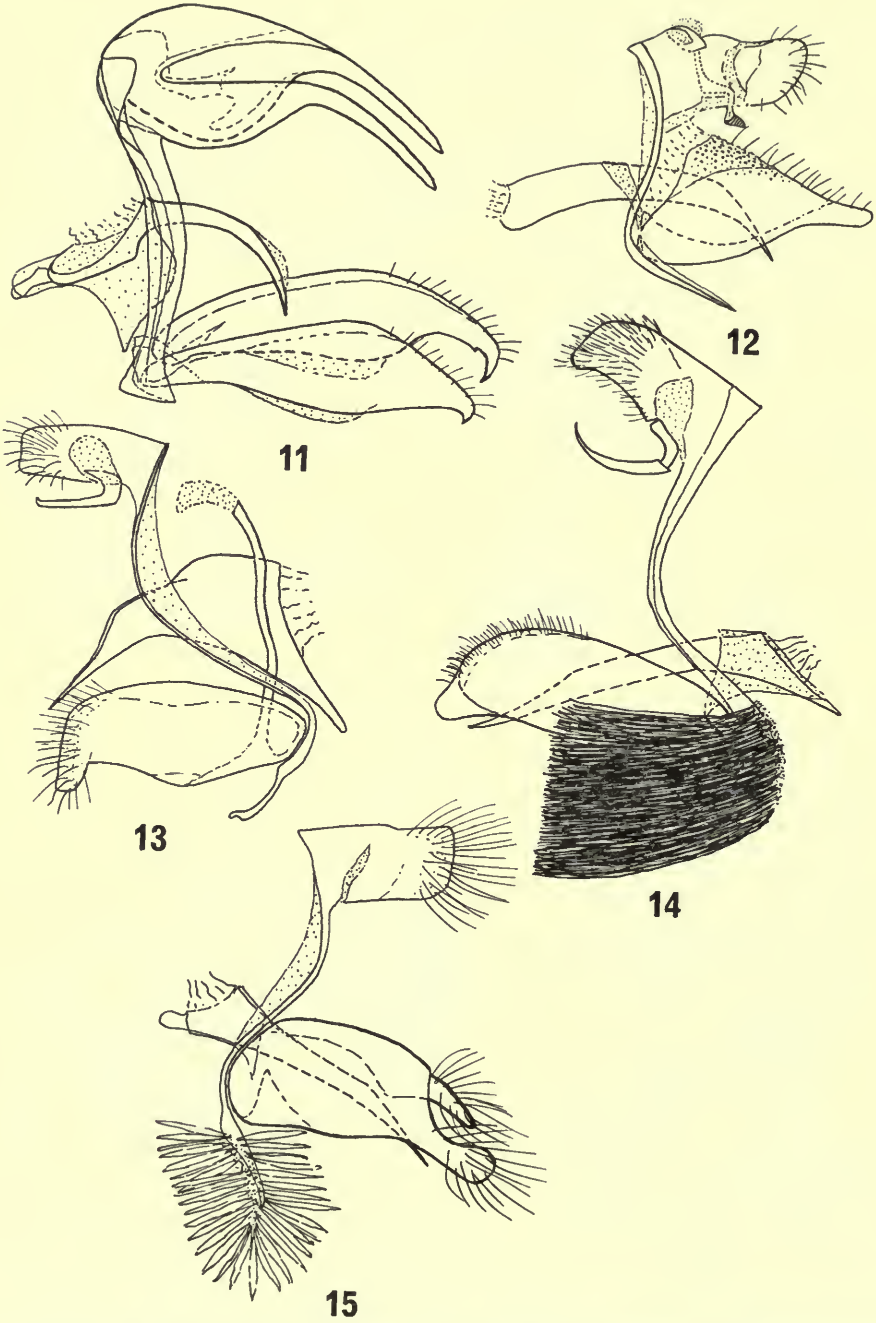
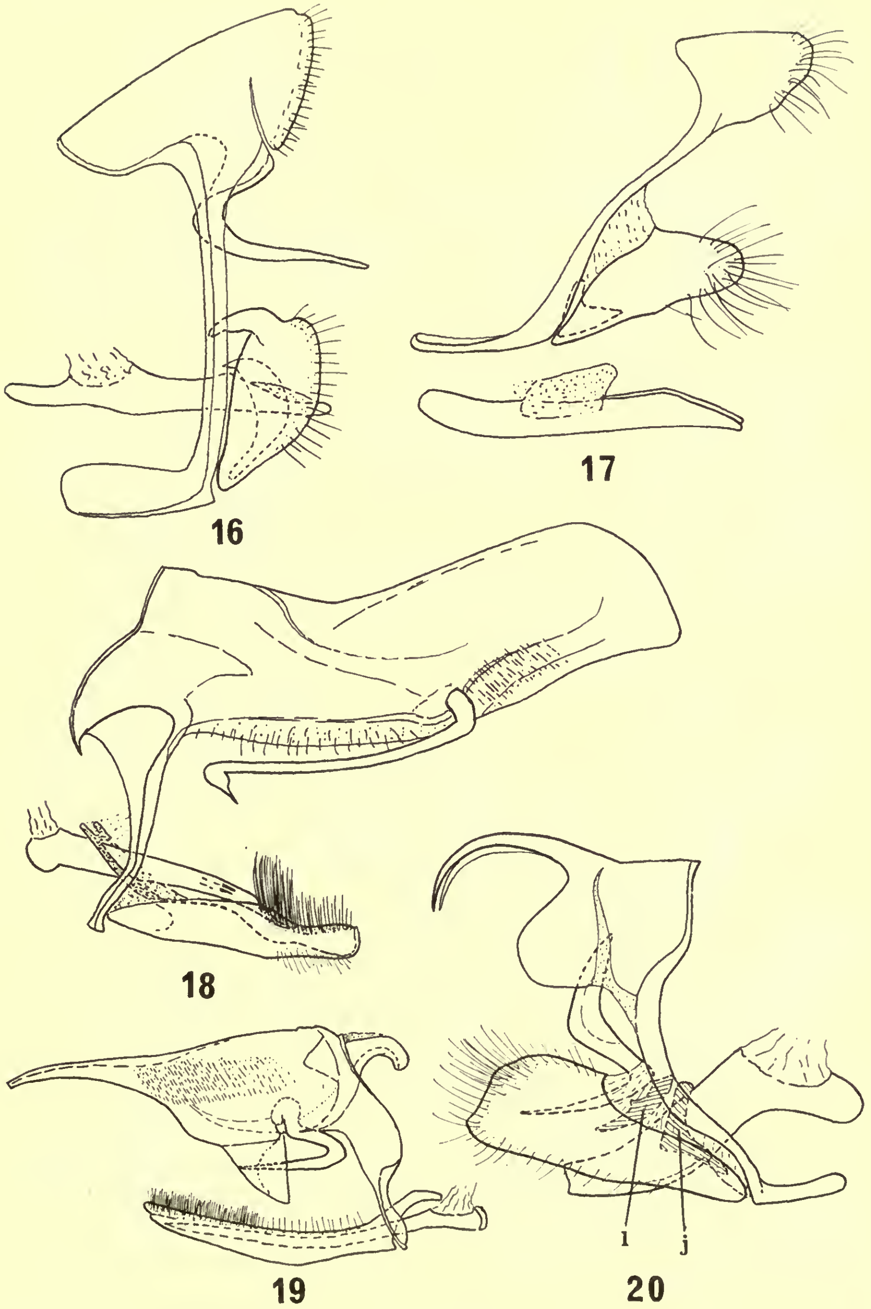
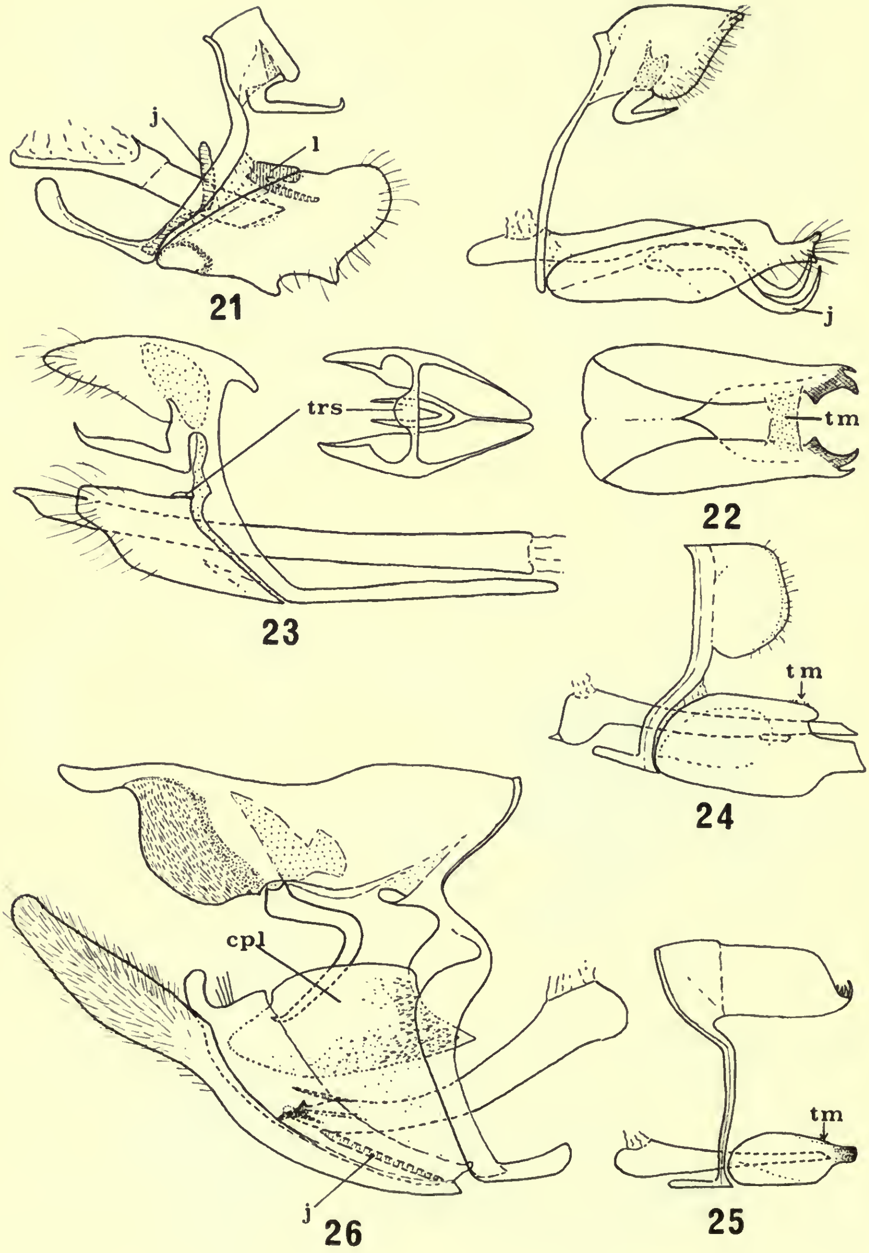
Figs 6–10. Male genitalia. 6. *Pentila tropicalis* (Boisduval), complete armature. 7. *Alaena amazoula* Boisduval. 8. *Telipna acraea* (Westwood), 8th sternite dotted. 9. *Ornipholidotos peucetia* (Hewitson), 8th sternite dotted. 10. *Baliochila aslauga* (Trimen).



FIGS 11–15 Male genitalia. 11. *Mimeresia libentina* (Hewitson), complete armature. 12. *Durbania amakosa* Trimen. 13. *Tetrarhanis ilma* (Hewitson). 14. *Aethiopana honorius* (Fabricius). 15. *Teratoneura isabellae* Dudgeon.



FIGS 16–20 Male genitalia. 16. *Euliphyra mirifica* Holland. 17. *Egumbia ernesti* (Karsch). 18. *Miletus gaesa* (de Nicéville). 19. *Megalopalpus zymna* (Westwood). 20. *Thestor protumnus* (L).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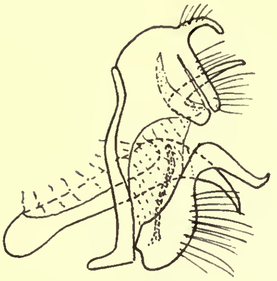
FIGS 21–26. Male genitalia. 21. *Lachnocnema bibulus* (Fabricius). 22. *Spalgis epius* (Westwood). 23. *Feniseca tarquinius* (Fabricius). 24. *Taraka mahanetra* Doherty. 25. *Taraka hamada* (H. Druce). 26. *Curetis regula* Evans.



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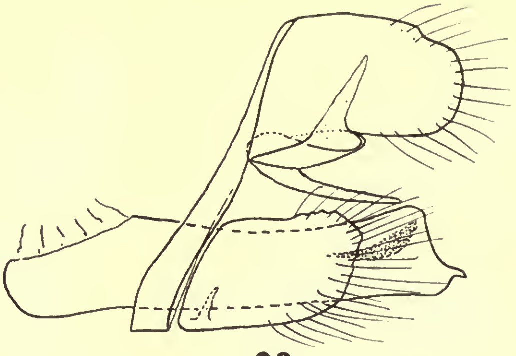

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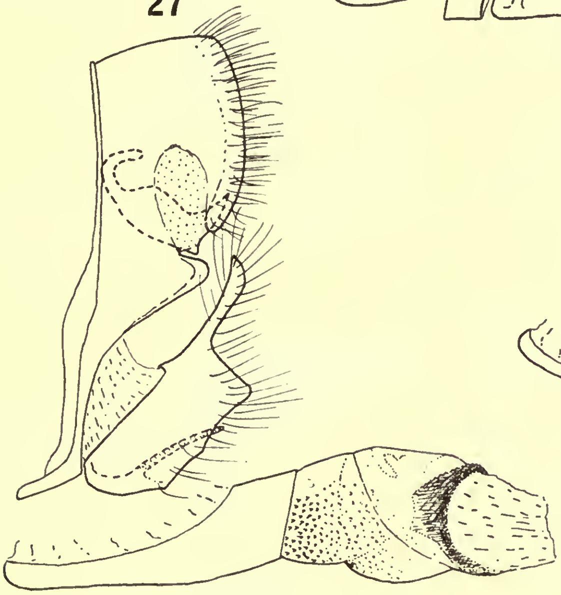

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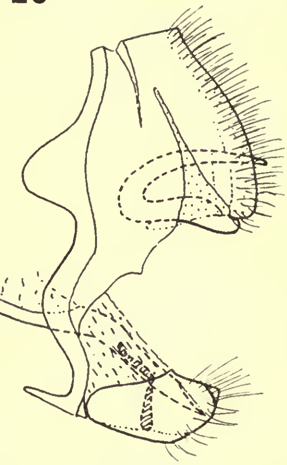

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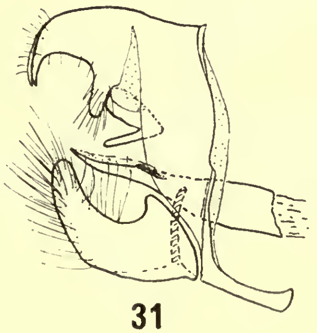

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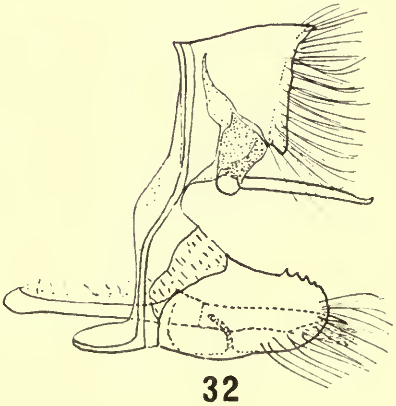

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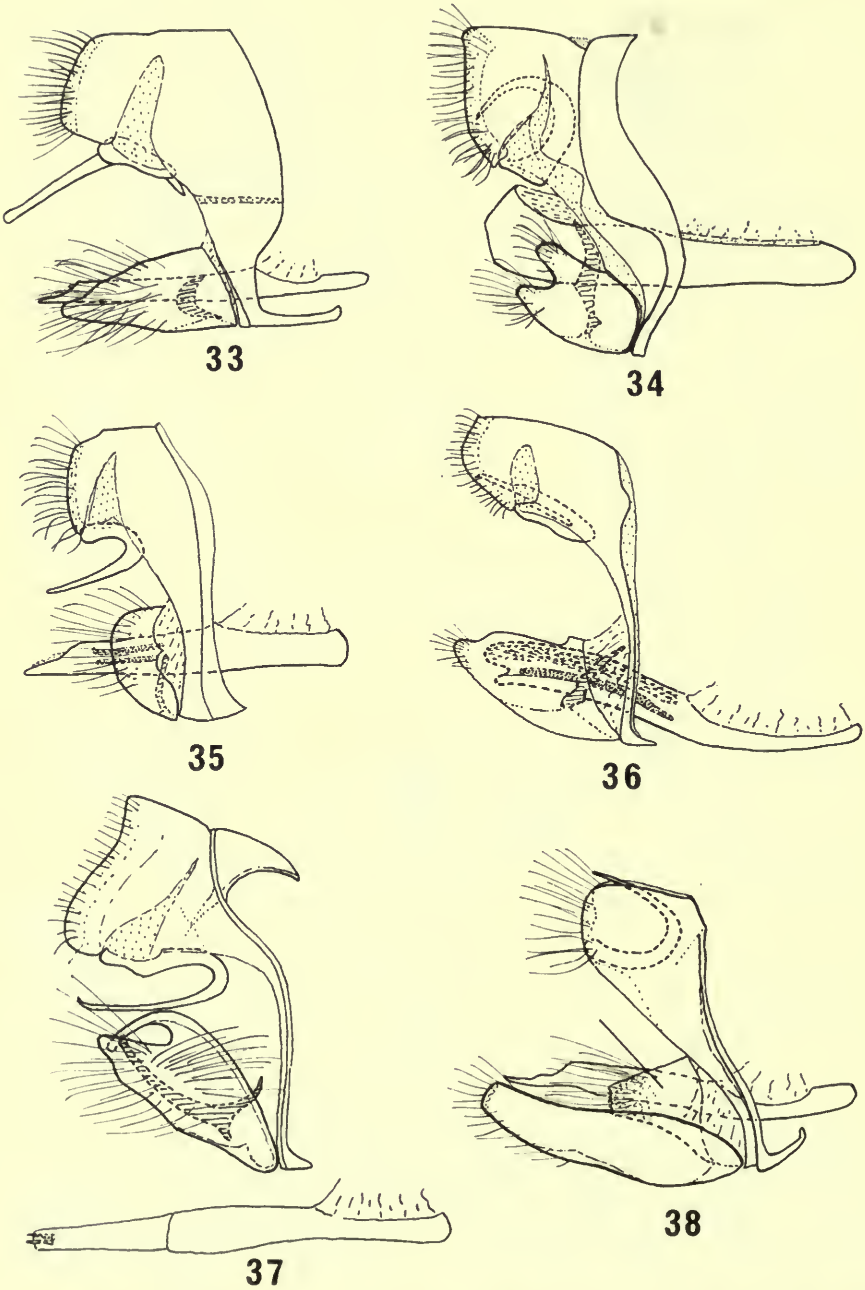
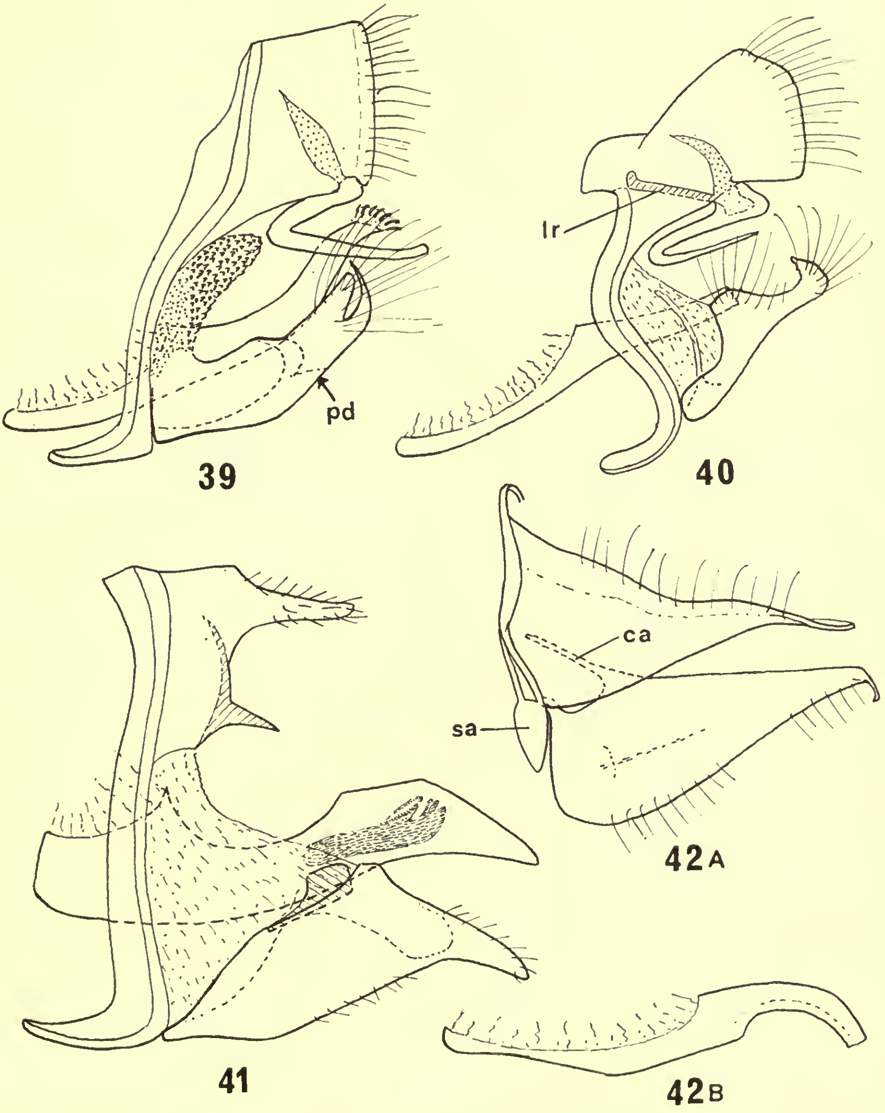
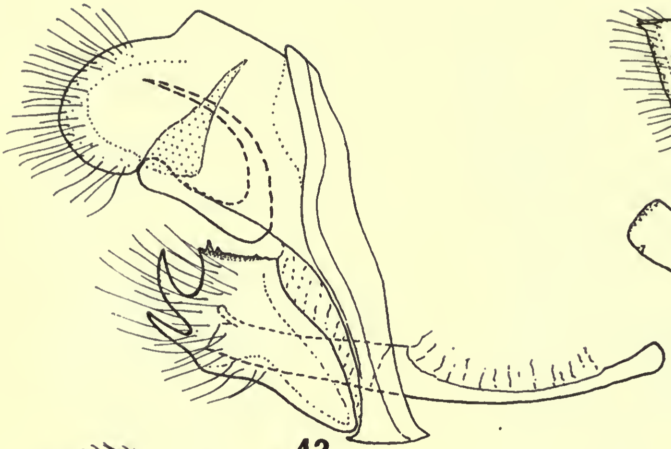
Figs 27–32. Male genitalia. 27. *Paralucia aenea* (Miskin). 28. *Waigeum ribbei* Röber. 29. *Quercusia quercus* (L.). 30. *Thecla betulae* (L.). 31. *Chaetoprocta odata* (Hewitson). 32. *Amblopala avidiena* (Hewitson).



FIGS 33–38. Male genitalia. 33. *Arhopala critala* (Felder). 34. *Ogyris genoveva* Hewitson. 35. *Hypothecla astyla* (Felder). 36. *Jalmenus evagoras* (Donovan). 37. *Pseudalmenus chlorinda* (Blanchard). 38. *Zesius chrysomallus* Hübner.



Figs 39–42. Male genitalia. 39. *Zinaspa todara* (Moore). 40. *Mota massyla* (Hewitson). 41. *Pseudaletis clymenus* (H. H. Druce). 42. *Cowania achaja* (Fruhstorfer), A, lateral view without penis; B, penis.



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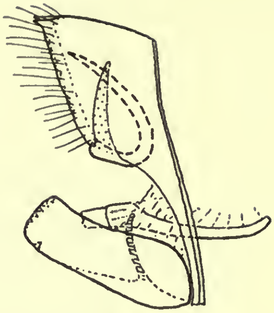

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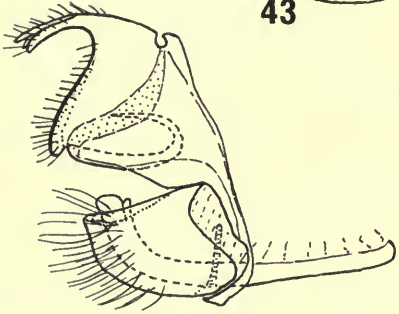

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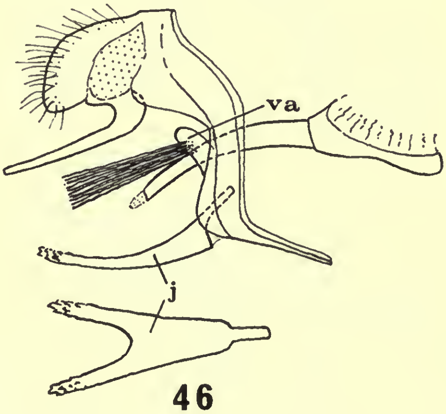

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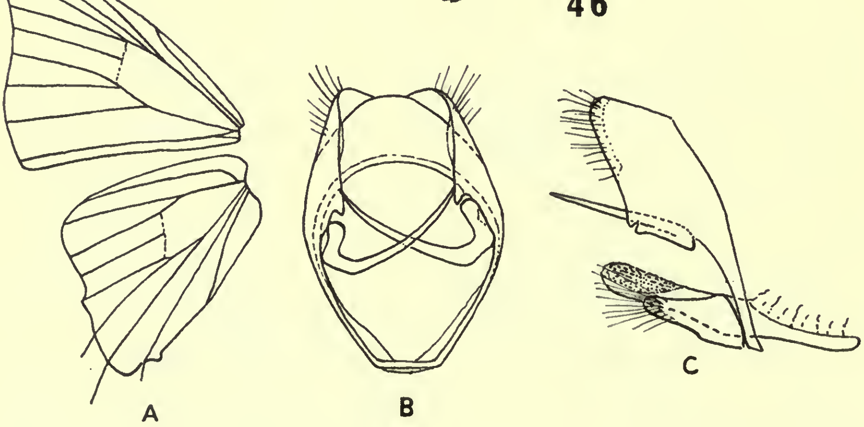

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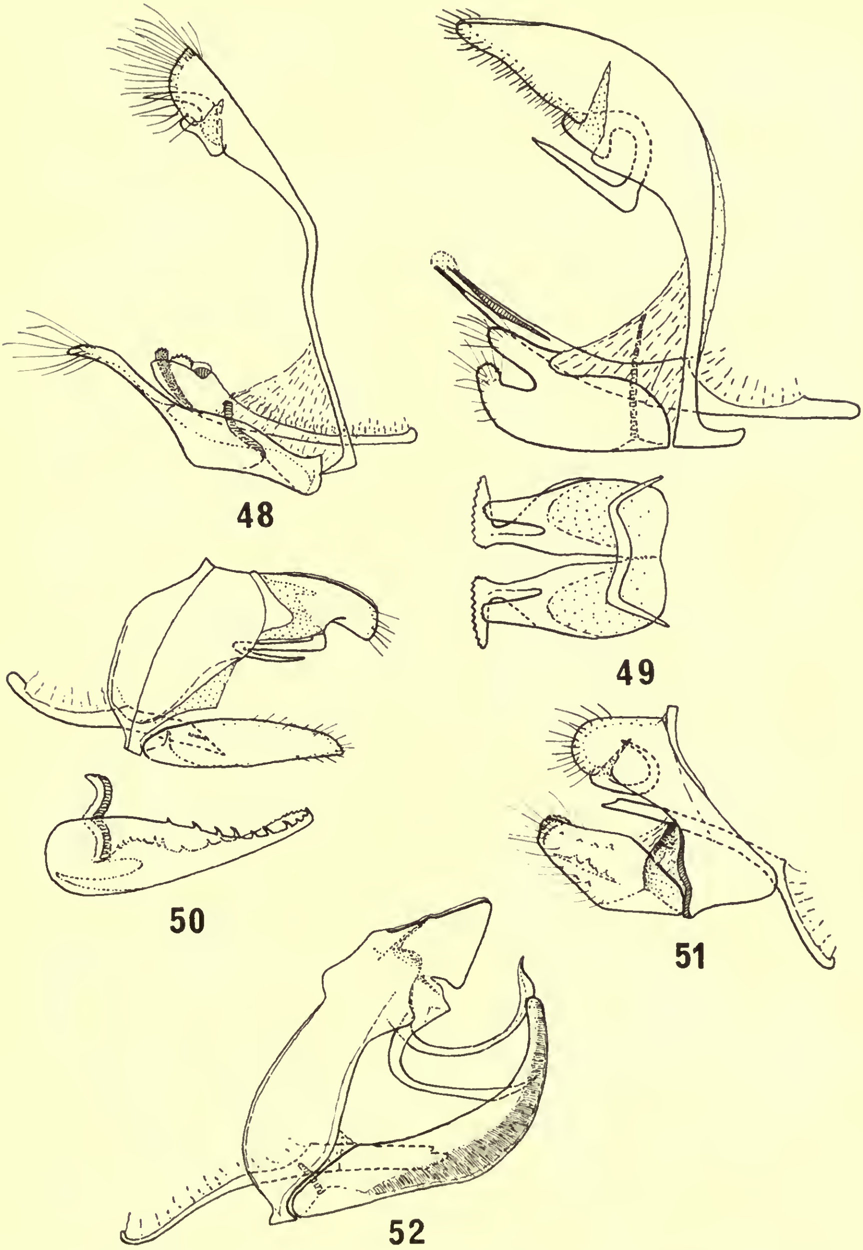
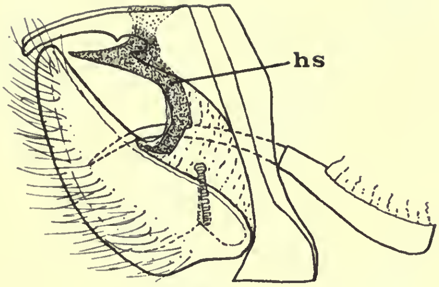
FIGS 43–47. Male genitalia and wing-venation. 43. *Amblypodia narada* Horsfield. 44. *Catapaecilma major* Fruhstorfer. 45. *Myrina silenus* (Fabricius). 46. *Syrmoptera amasa* (Hewitson). 47. *Acupicta delicatum* (de Nicéville), A, venation; B, ring viewed distally; C, lateral view of armature.



FIGS 48–52. Male genitalia. 48. *Drina cowani* Corbet. 49. *Neomyrina nivea* (Godman & Salvin), above, complete armature; below, dorsal view of valvae + juxta. 50. *Loxura cassiopeia* Distant. 51. *Thamala marciana* (Hewitson). 52. *Horaga maenala* (Hewitson), complete armature less right valva.



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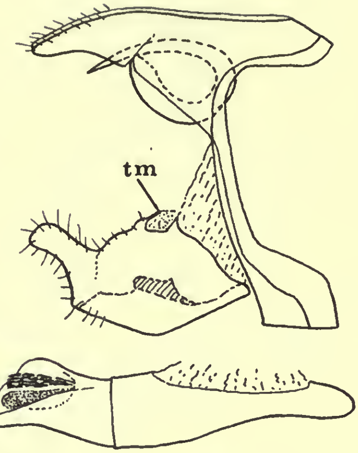

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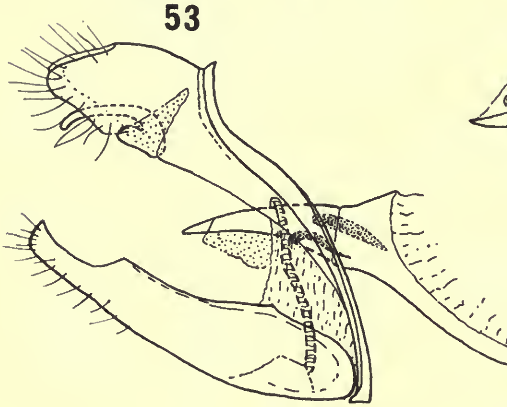

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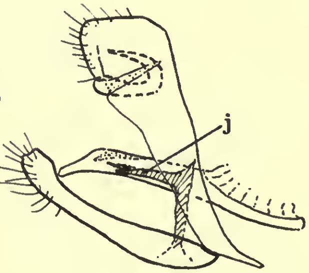

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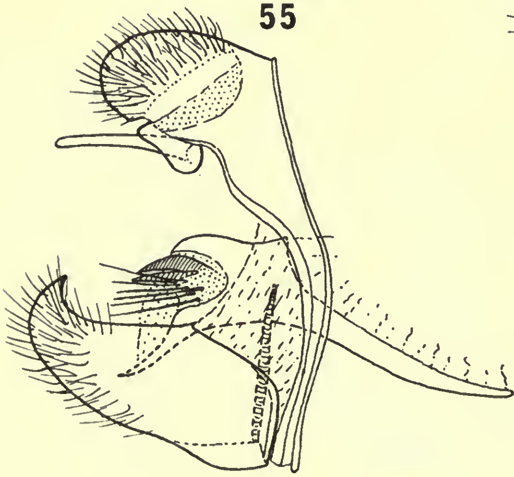

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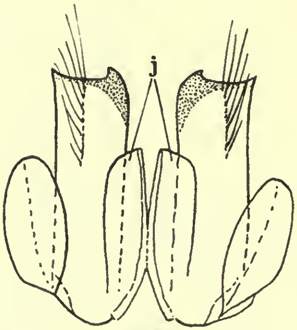

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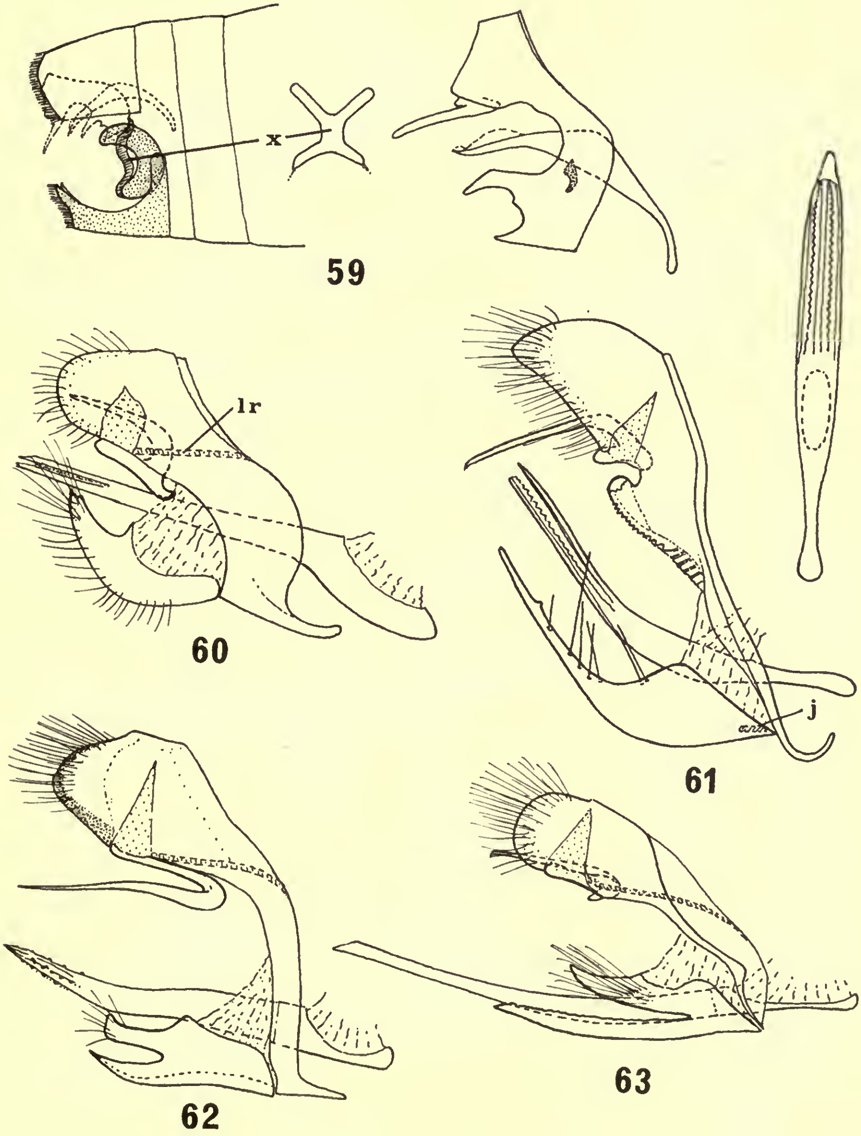
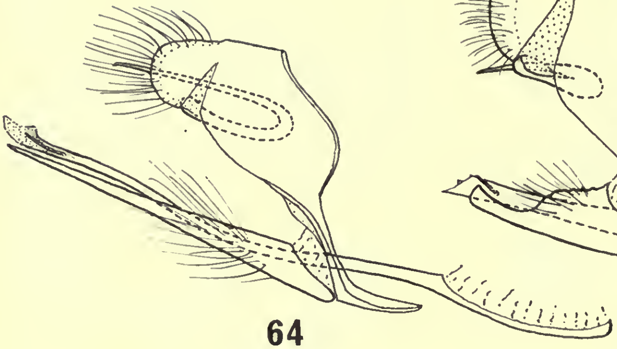
FIGS 53–58. Male genitalia. 53. *Dapidodigma hymen* (Fabricius). 54. *Spindasis syama* (Horsfield). 55. *Iolaus eurisus* (Cramer). 56. *Pratapa deva* (Moore). 57. *Jacoona anasuja* (Felder). 58. *Hemiolaus coeculus* (Mabille), dorsal view of valvae + juxta.



FIGS 59–63. Male genitalia. 59. *Britomartis cleoboides* (Elwes), left, terminal portion of abdomen to show armature in situ and abdominal chitinous structures; centre, X-piece; right, armature. 60. *Gonatomyrina lara* (L.). 61. *Remelana jangala* (Horsfield) armature and, above right, dorsal view of penis. 62. *Pseudotajuria donatana* (de Nicéville). 63. *Ancema blanka* (de Nicéville).



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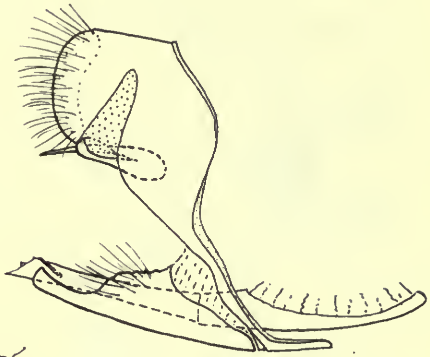

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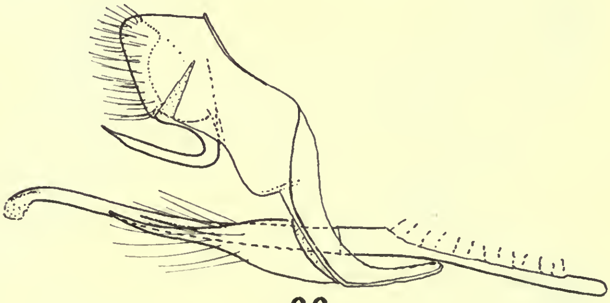

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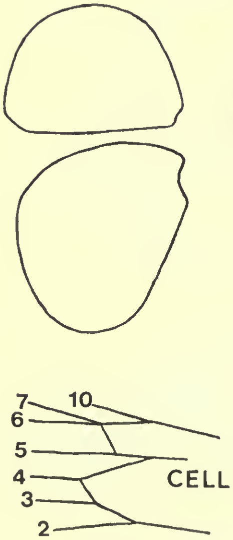

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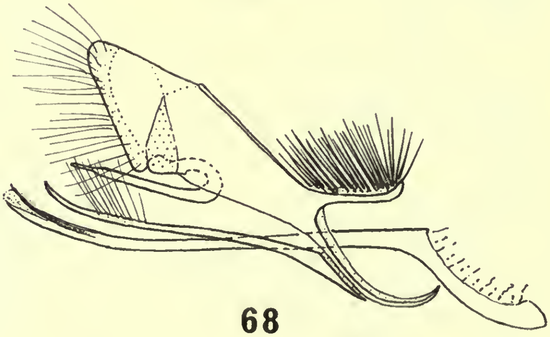

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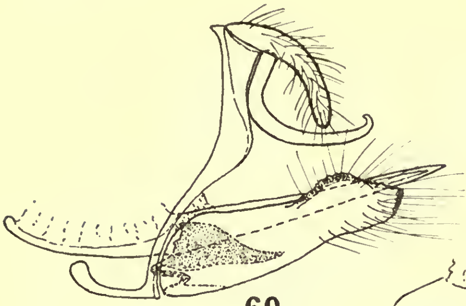
Figs 64–68. Male genitalia and wing venation. 64. *Tomares ballus* (Fabricius). 65. *Deudorix epijarbas* (Moore). 66. *Strymon melinus* Hübner. 67. *Micandra platyptera* (Felder), above, outline of wings; below, venation of part of fore wing. 68. *Thereus lausus* (Cramer).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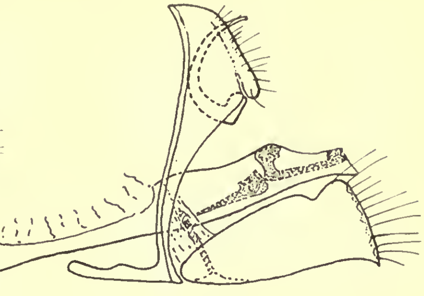
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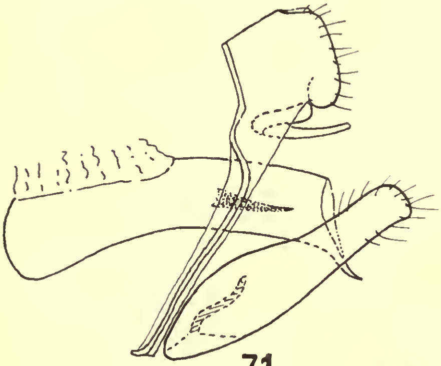
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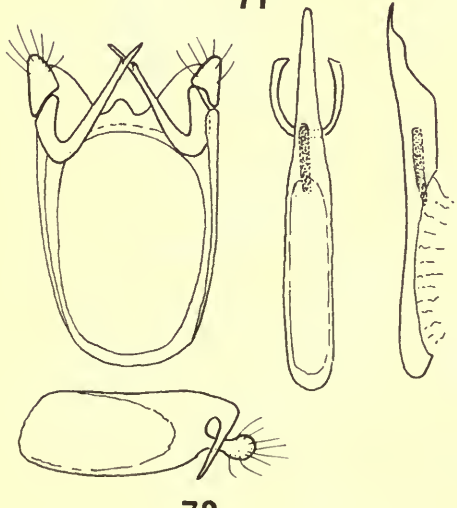
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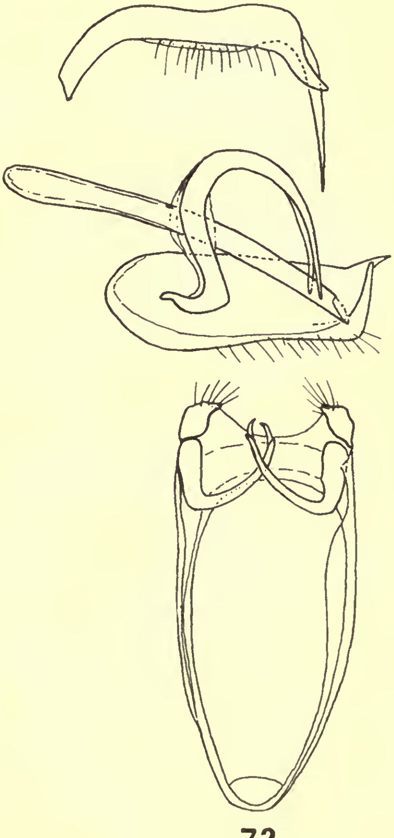
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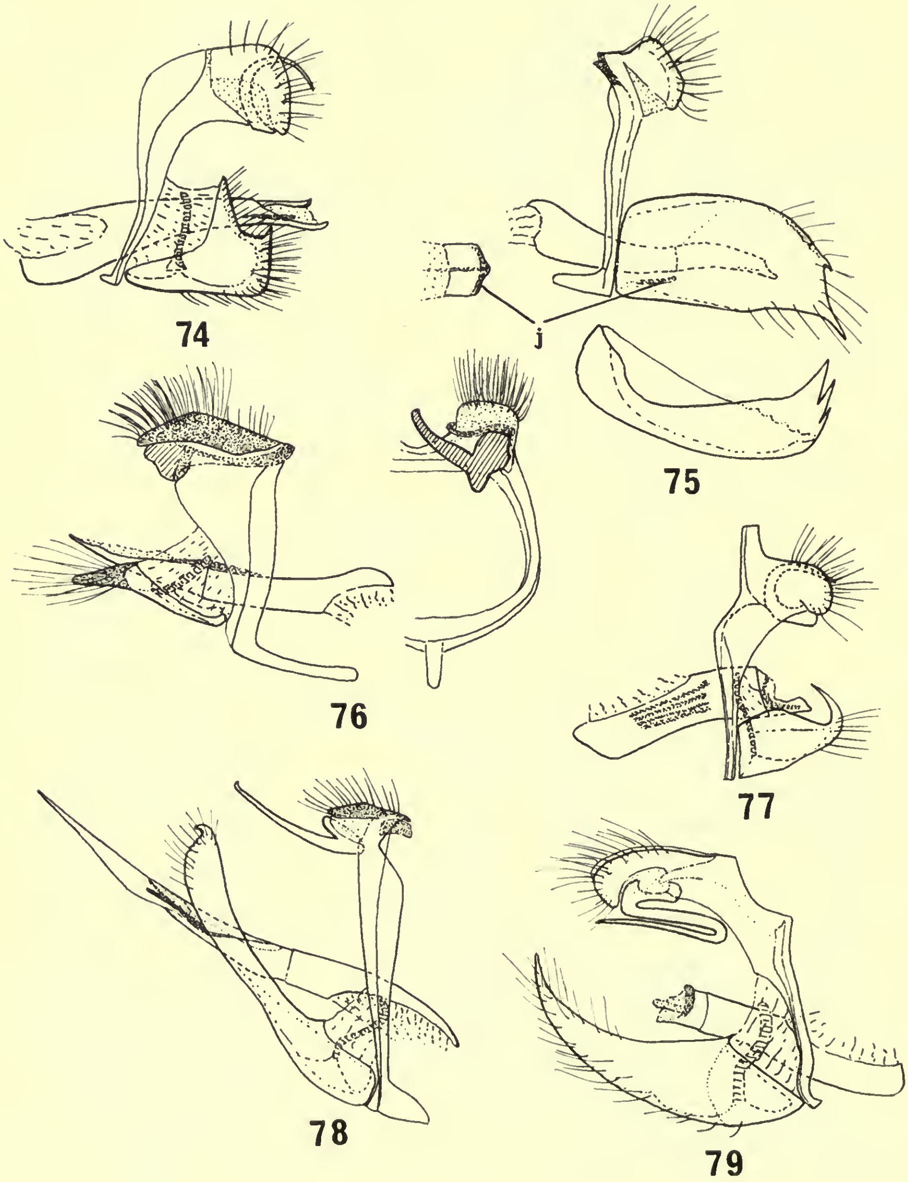
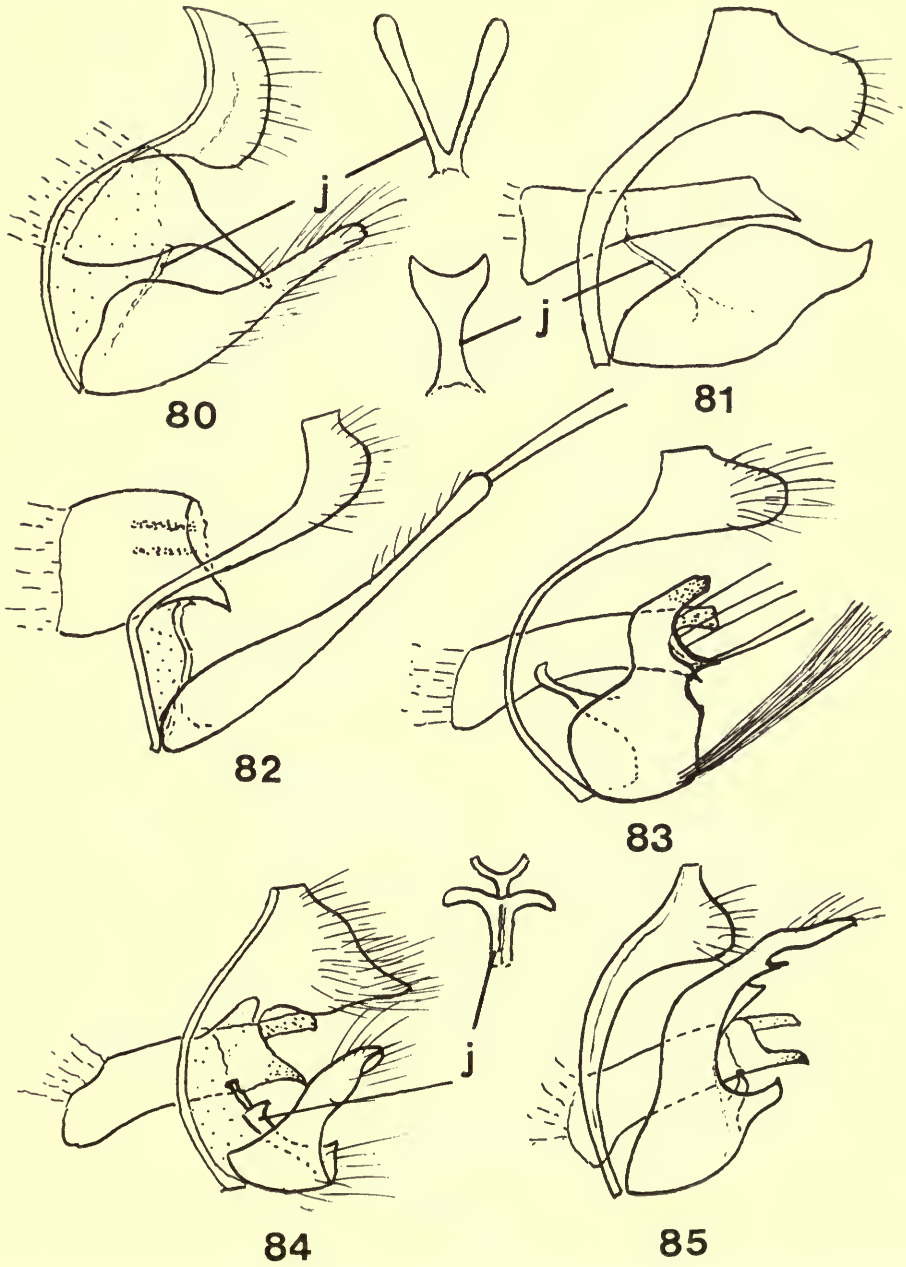
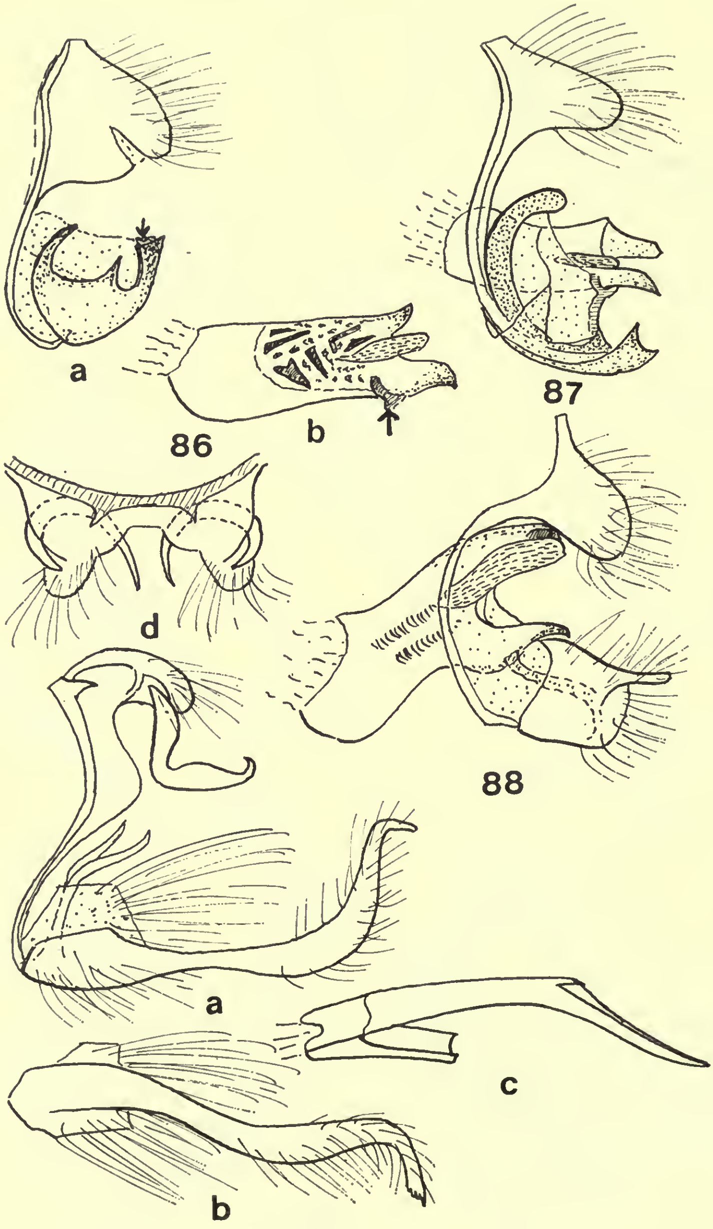
Figs 69–73. Male genitalia. 69. *Lycaena salustius* (Fabricius). 70. *Lycaenesthes lycaenoides* (Felder). 71. *Niphanda tessellata* Moore. 72. *Zetona delospila* (Waterhouse), ring viewed distally, dorsal view of penis + juxta, lateral view of penis and internal view of right valva. 73. *Nesolycaena alboscricea* (Miskin), above, dorsal view of right valva; centre, internal view of right valva + juxta; below, distal view of ring.



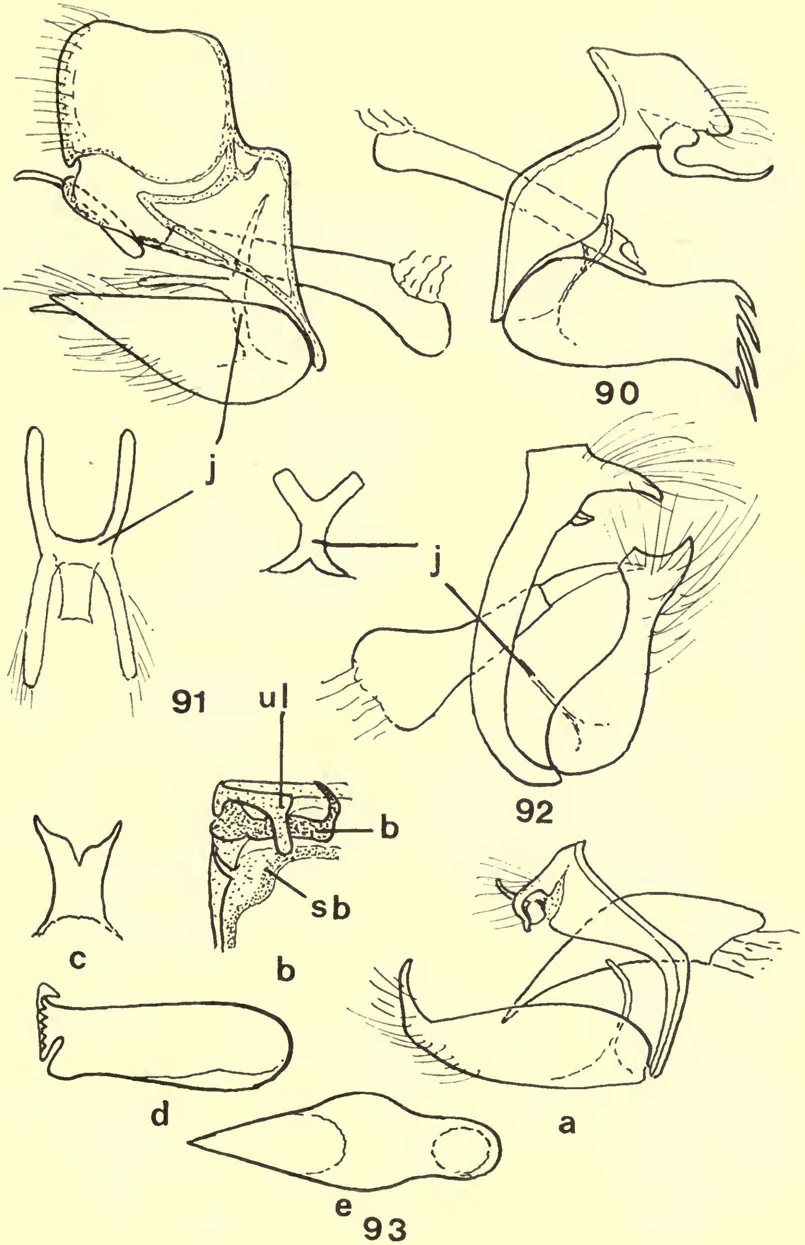
FIGS 74–79. Male genitalia. 74. *Cupidopsis cissus* (Godart). 76. *Una usta* (Distant), armature and, below, ventral view of right valva. 76. *Pseudonacaduba sichela* (Wallengren), armature and, right, distal view of right half of ring. 77. *Prosotas gracilis* (Röber). 78. *Petrelaea dana* (de Nicéville). 79. *Neolucia mathewi* (Miskin).



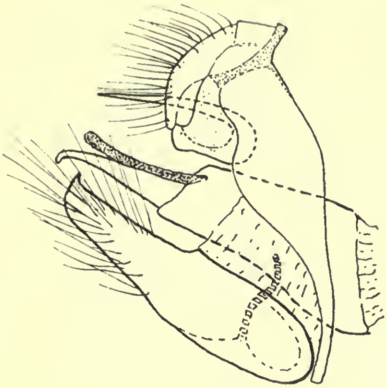
FIGS 80–85. Male genitalia. 80. *Discolampa illissus* (Felder) **comb. n.** 81. *Upolampes evena* (Hewitson). 82. *Discolampa ethion* (Westwood). 83. *Caleta decidia* (Hewitson). 84. *Caleta caleta* (Hewitson). 85. *Caleta mindarus* (Felder).



Figs 86–89. Male genitalia. 86. *Pistoria nigropunctata* (Bethune-Baker). 87. *'Caleta'* (? gen. n.) *elna* (Hewitson). 88. *Pycnothallium roxus* (Godart). 89. *Callictita arfakiana* Wind & Clench, a, lateral view of armature; b, ventral view of right valva, c; dorsolateral view of penis; d, dorsal view of dorsum.



Figs 90–93. Male genitalia. 90. '*Phlyaria*' (*Lycaena*) *heritsia* (Hewitson). 91. *Uranothauma nubifer* (Trimen). 92. *Thaumaina uranothauma* Bethune-Baker. 93. *Psychonotis purpurea* (H. H. Druce) a, lateral view of armature; b, distal view of dorsal structures; c, juxta; d, internal view of left valva; e, dorsal view of penis.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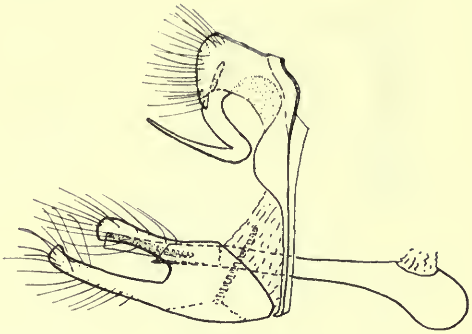
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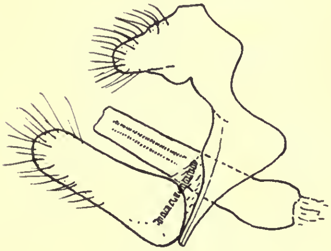
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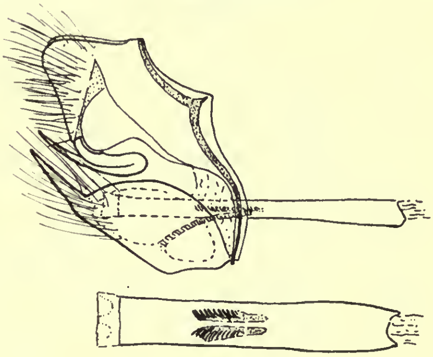
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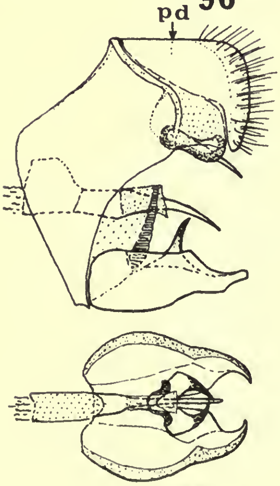

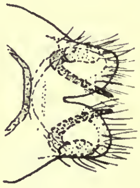

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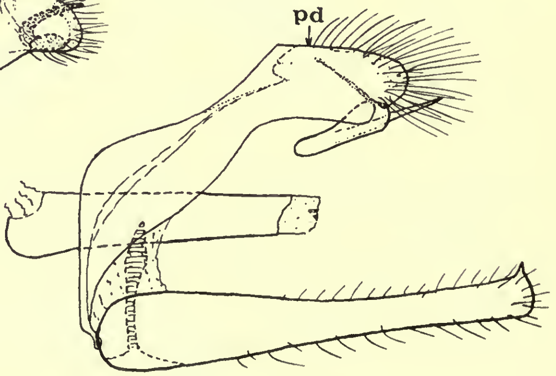

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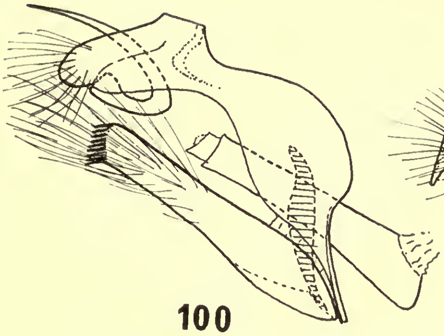
FIGS 94–99. Male genitalia. 94. *Danis danis* (Cramer). 95. *Jamides pura* (Moore). 96. *Rysops scintilla* (Mabille). 97. *Catochrysops panormus* (Felder). 98. *Theclinesthes serpentata* (Herrich-Schäffer) **comb. n.**, armature and, right, dorsal view of dorsum; below, dorsal view of valvae + juxta + penis. 99. *Phlyaria cyara* (Hewitson).



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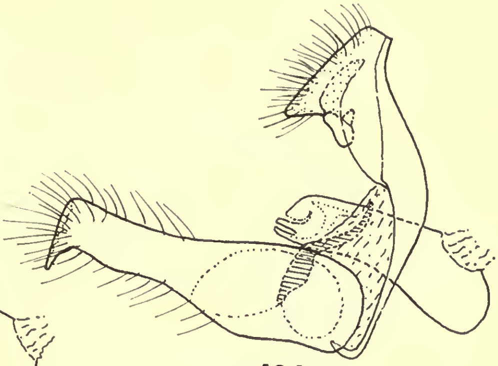

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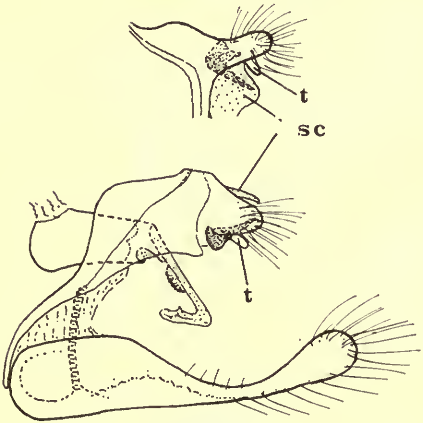

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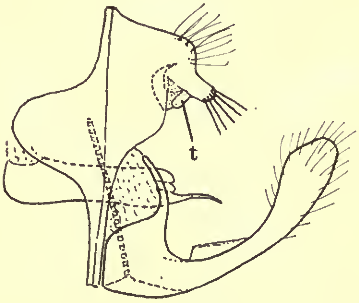

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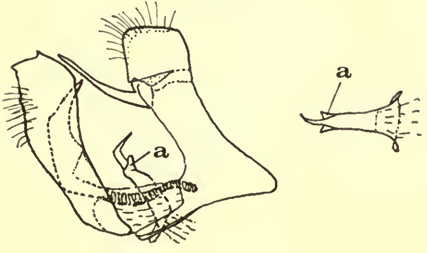

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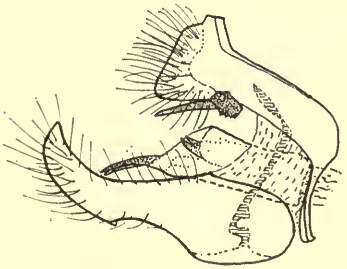

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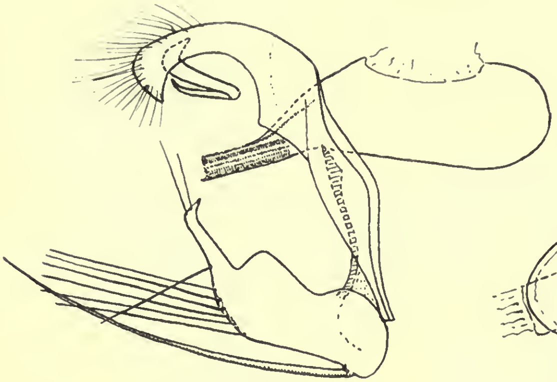
FIGS 100–105. Male genitalia. 100. *Uranothauma antinorii* (Oberthür). 101. *Lampides boeticus* (L.). 102. *Cacyreus lingeus* (Cramer). 103. *Harpendyreus tsomo* (Trimen). 104. '*Castalius*' *melaena* (Trimen), armature and, right, dorsal view of penis. 105. *Leptotes cassius* (Cramer).



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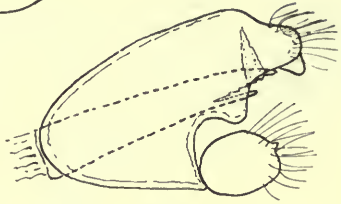

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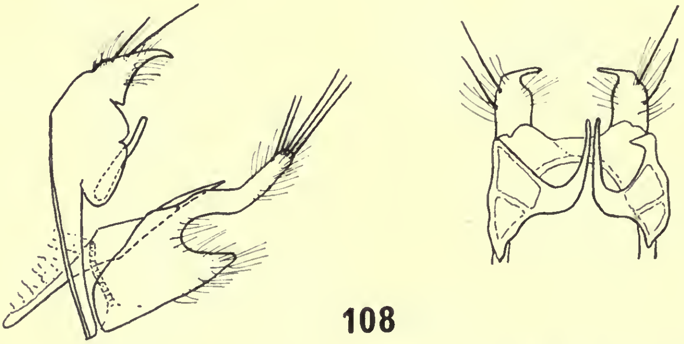

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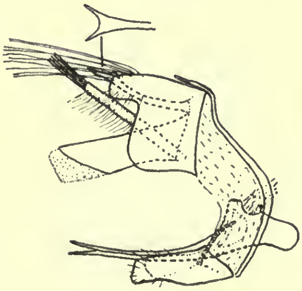

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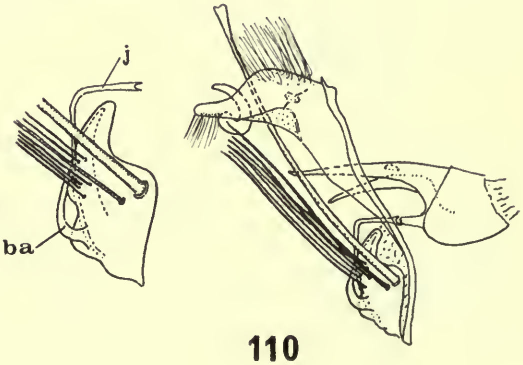

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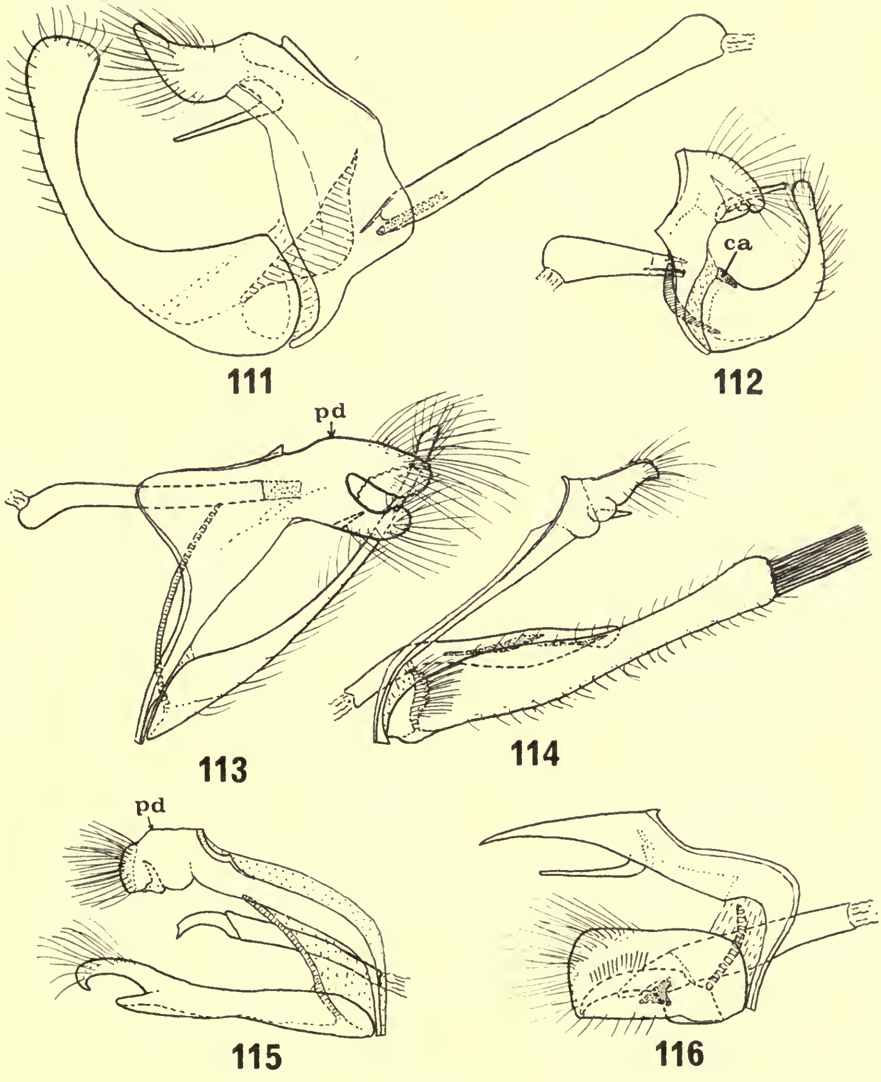
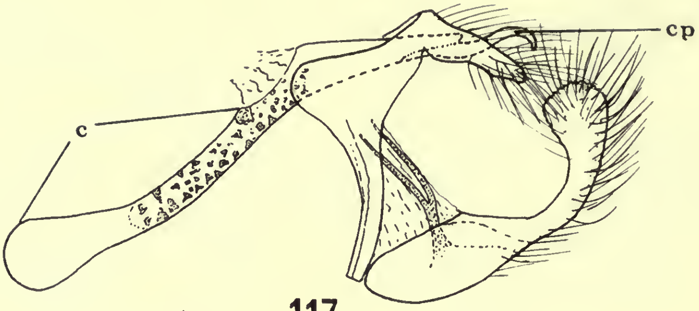
FIGS 106–110. Male genitalia. 106. *Zizina otis labradus* (Godart). 107. *Zintha hintza* (Trimen). 108. *Famegana alsulus* (Herrich-Schäffer), armature and, right, ventral view of dorsum. 109. *Oraidium barbarae* (Trimen). 110. *Zizula hylax* (Fabricius), armature and, left, enlargement of valva + juxta.



FIGS 111–116. Male genitalia. 111. *Actizera stellata* (Trimen), much enlarged compared with text-fig. 112. 112. *Actizera lucida* (Trimen). 113. *Eicochrysops mahallakoena* (Wallengren). 114. *Azanus jesous* (Guérin-Méneville). 115. *Pithecops corvus* Fruhstorfer. 116. *Talicada nyseus* (Guérin-Méneville).



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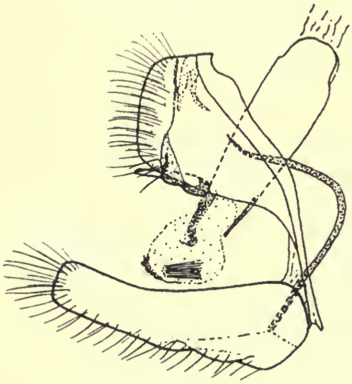

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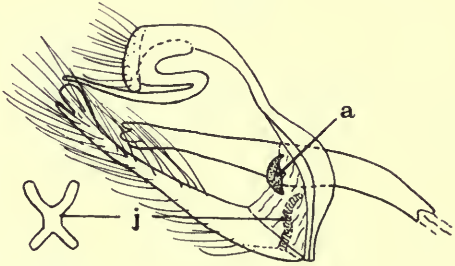

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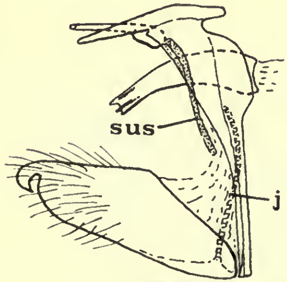

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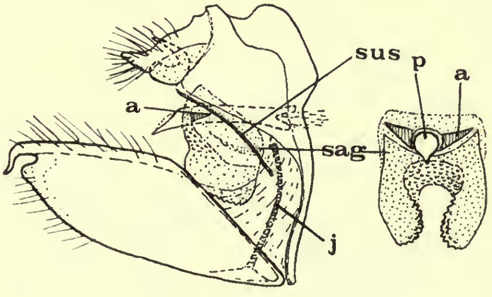

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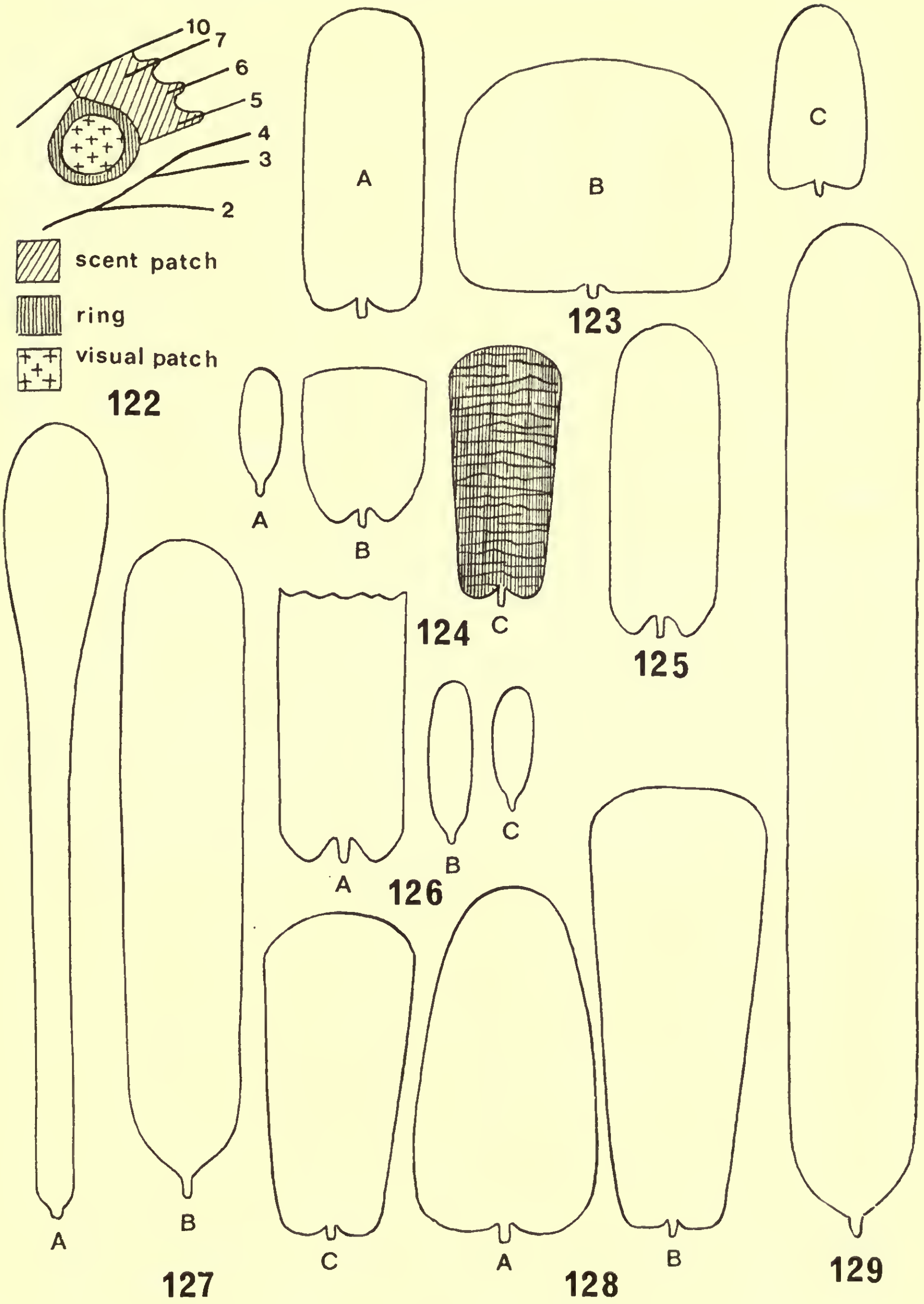
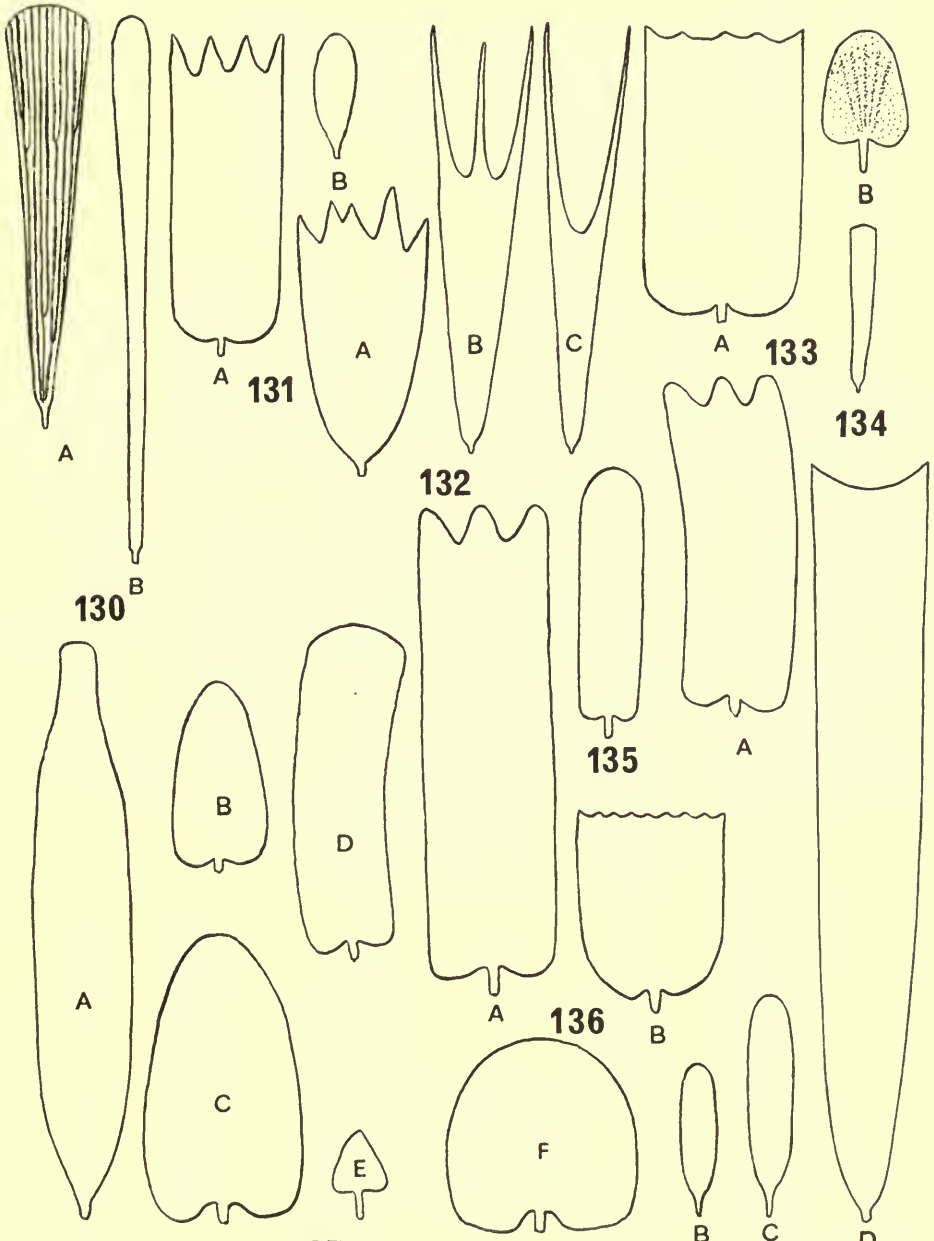
FIGS 117–121. Male genitalia. 117. *Rhinelephas arrhina* Toxopeus. 118. *Scolitantides orion* (Pallas). 119. *Euchrysops cnejus* (Fabricius). 120. *Chilades laius* (Cramer). 121. *Pseudolucia chilensis* (Blanchard).



FIGS 122–129. Male wing brand and scales. 122. Fore wing brand of *'Thecla' bitias* (Cramer). 123. Scales from brand of *'T'. bitias*. A, scale from visual patch; B, scale from ring; C, scent scale. 124. *Catapaecilma elegans* (H. Druce), A, scent scale from fore wing vein 1; B, fuscous under-scale; C, purple top-scale. 125. *Drupadia ravindra* (Horsfield), presumed scent scale from hind wing brand. 126. *Rapala iarbas* (Fabricius), A, red top-scale; B, scent scale from fore wing vein 4; C, scent scale from hind wing brand. 127. *Micandra platyptera* (Felder), A, pale blue scale from fore wing brand; B, fuscous scale from fore wing brand; C, blue top-scale. 128. *Trichonis theanus* (Cramer), A, presumed scent scale from hind wing brand; B, blue top-scale. 129. *Purlisa giganteus* (Distant), presumed scent scale from abdominal brand.

Figs 130–138. Male wing scales. 130. *Drina discophora* (Felder), A, scent scale; B, short plume scale from fore wing brand. 131. *Tomares ballus* (Fabricius), A, top-scale; B, scent scale from fore wing brand. 132. *Pentila tropicalis* (Boisduval), A, normal scale; B, C, modified scales from under surface of fore wing. 133. *Aslauga vininga* (Hewitson), A, top-scale; B, scent scale from hind wing brand. 134. *Miletus chinensis* Felder, scent scale from swollen part of fore wing vein 4. 135. *Hemiolaus coeculus* (Hopffer), scent scale from hind wing brand. 136. *Dacalana vidura* (Horsfield), A, B, presumed scent scales from fore wing brand. 137. *Poritia erycinoides* (Felder), A, B, C, scales from abdominal brand, A, being a presumed scent scale; D, blue top-scale; E, scent scale from hind wing brand; F, polished scale from under surface of fore wing. 138. *Aethiopana honorius* (Fabricius), A, blue top-scale; B, C, presumed scent scales from fore wing veins; D, specialized (? scent) scale from vein 1 above the hair fringe.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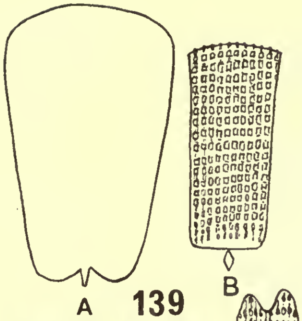
D

FIGS 139–162. Male wing scales. 139. *Rysops scintilla* (Mabille), A, blue top-scale; B, battledore scale. 140. *Catochrysops strabo* (Fabricius), battledore scale. 141. *Zizina otis* (Fabricius), battledore scales. 142. *Brephidium exilis* (Boisduval), battledore scale. 143. *Zizeeria maha* (Kollar), battledore scale. 144. *Actizera lucida* (Trimen), battledore scale. 145. *Itylos moza* (Staudinger), battledore scales. 146. *Azanus mirza* (Plotz), battledore scale. 147. *Agrodiaetus ripartii* (Freyer), battledore scale. 148. *Petrelaea dana* (de Nicéville), paddle scale. 149. *Azanus ubaldus* (Cramer), paddle scale. 150. *Freyeria trochylus* (Freyer), A, brown top-scale; B, gelbe schuppe; C, battledore scale. 151. *Upolampes evena* (Hewitson), battledore scale. 152. *Pseudonacaduba sichela* (Wallengren), battledore scale. 153. *Famegana alsulus* (Herrich-Schäffer), battledore scale. 154. *Psychonotis purpurea* (H. H. Druce) **comb. n.,** battledore scale. 155. *Zintha hintza* (Trimen), battledore scale. 156. '*Holochila*' *absimilis* Felder, dagger scale. 157. *Uranothauma antinorii* (Oberthür), modified short plume scale. 158. *Danis danis* (Cramer), battledore scale. 159. *Theclinesthes miskini* (Lucas), battledore scale. 160. *Niphanda tessellata* Moore, 'hieroglyphically-marked' scale. 161. *Lampides boeticus* (L.), androconial scale. 162. *Uranothauma nubifer* (Trimen), short plume scale.



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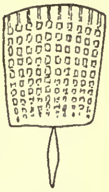

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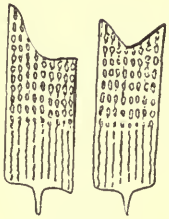

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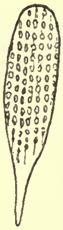

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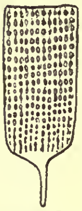

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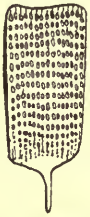

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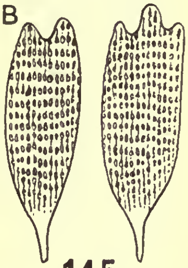

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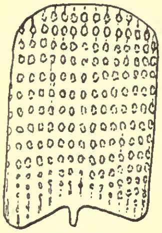

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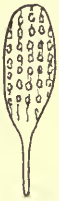

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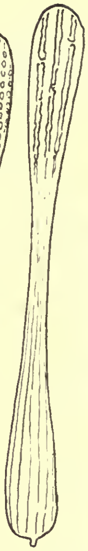

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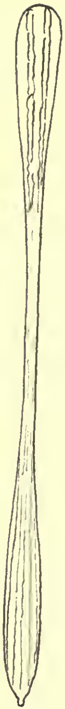

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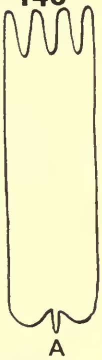

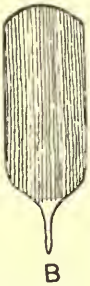

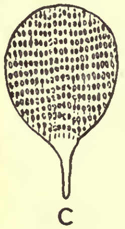

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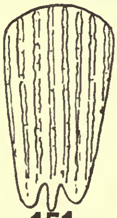

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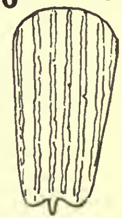

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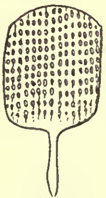

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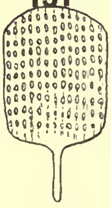

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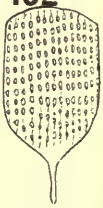

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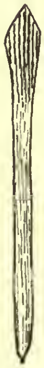

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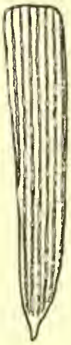

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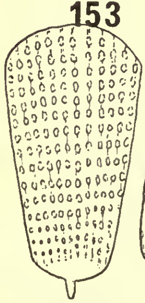

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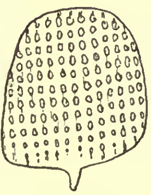

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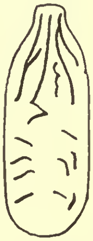

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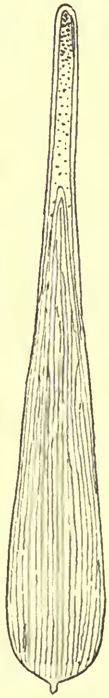

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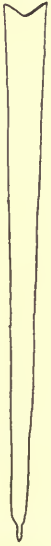

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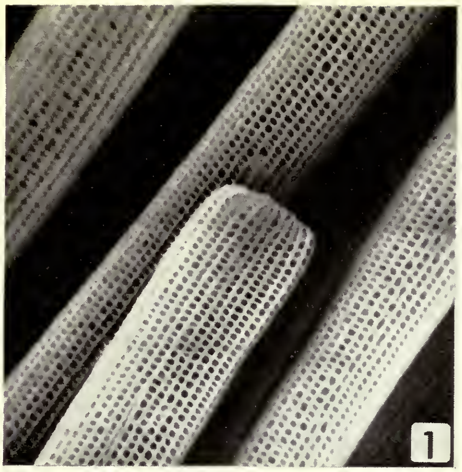
PLATE 1

Figs 1–6. (1–3) *Rapala iarbas* (Fabricius), male: (1) detail of scales from hair tuft on fore wing dorsum (×925, neg. E5/641); (2) scent scales from hind wing brand (×925, neg. E5/644); (3) scales from polished area of underside fore wing (×925, neg. E5/638); (4–6) *Thecla bitias* (Cramer) male: (4) part of outer scent patch on fore wing (×240, oblique angle 20°, neg. E8/259); (5) surface detail of scale from same (×2,500, neg. E8/260); (6) surface detail of scale from central 'visual' patch on fore wing (×2,800, neg. E8/257).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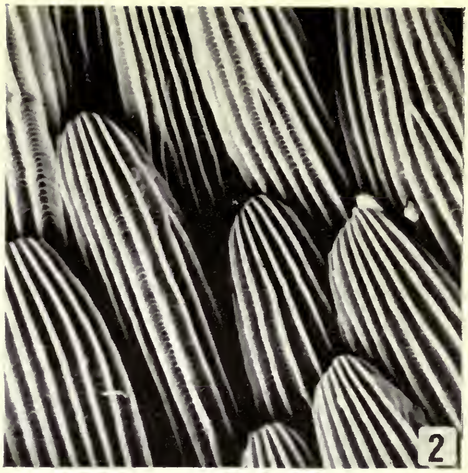
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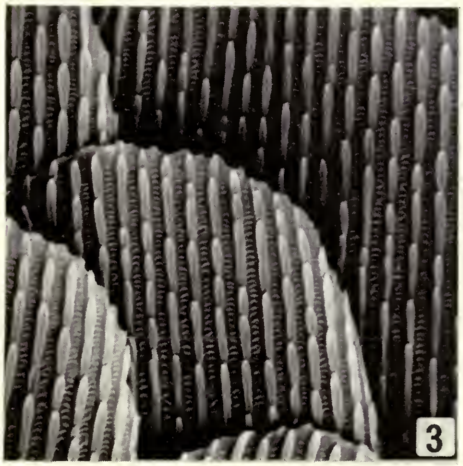
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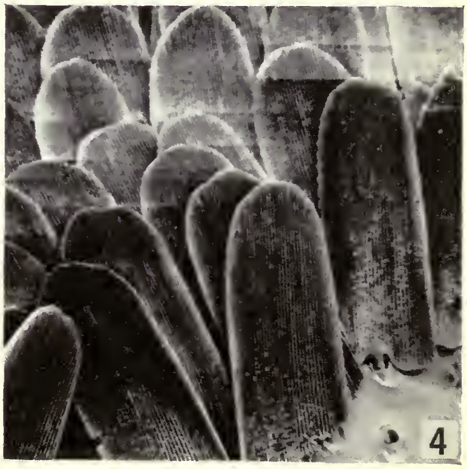
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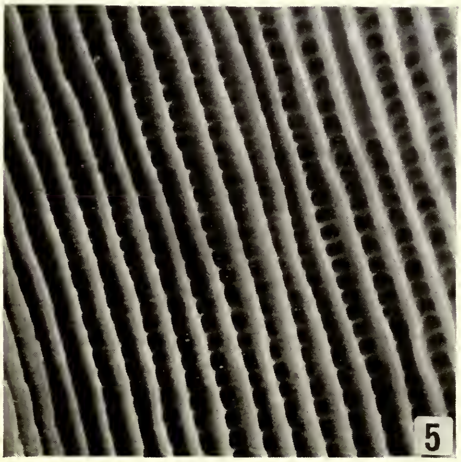
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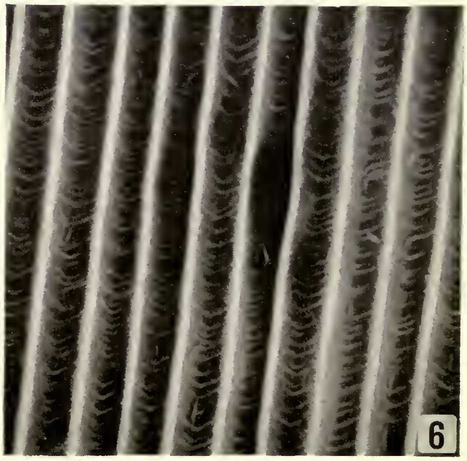
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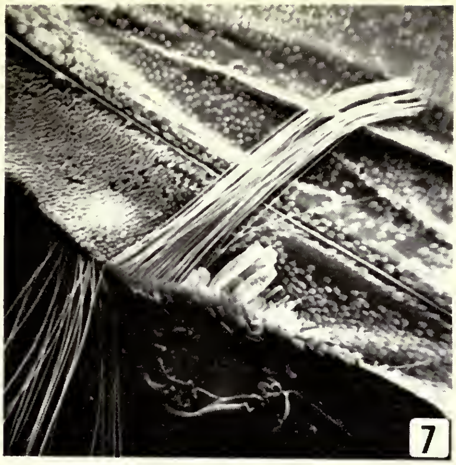
PLATE 2

Figs 7–12. *Creon cleobis* (Godart), male: (7) underside of fore wing showing erectile hair tuft and tuft of large 'boat-shaped' scales (×11, neg. E8/241); (8) detail showing hair tuft sockets of same (×280, neg. E8/243); (9) surface detail of large 'boat-shaped' scale of same (×1,950, neg. E8/227); (10) scent scales of hind wing brand (×275, neg. E7/155); (11) surface detail of scale from hind wing brand (×1,100, neg. E8/247); (12) fine detail of same (×5,450, neg. E8/248).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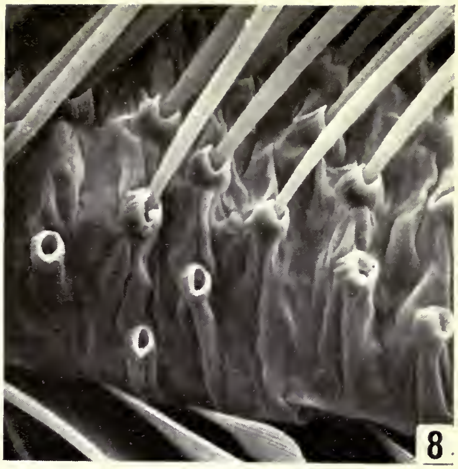
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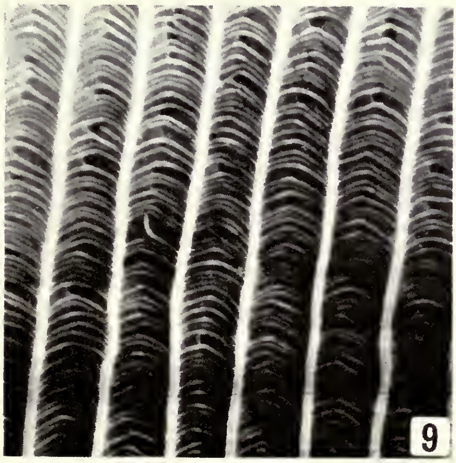
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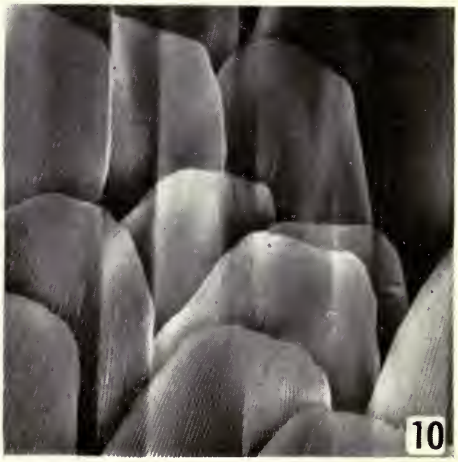
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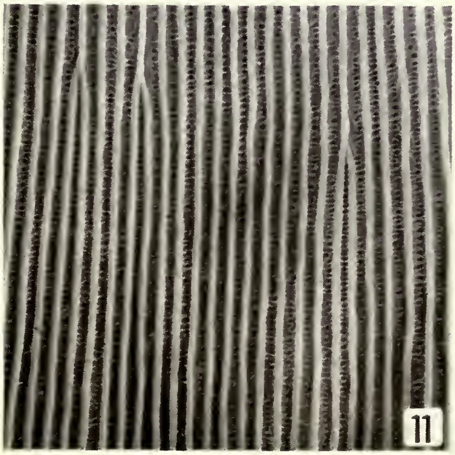
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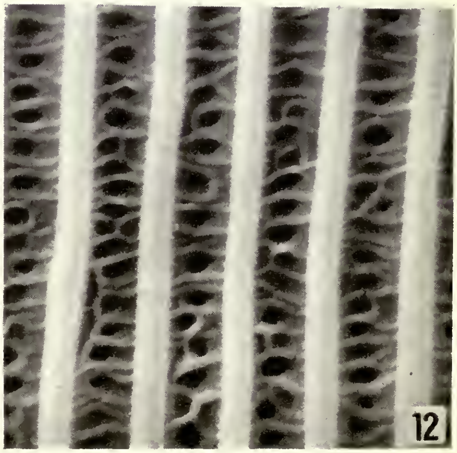
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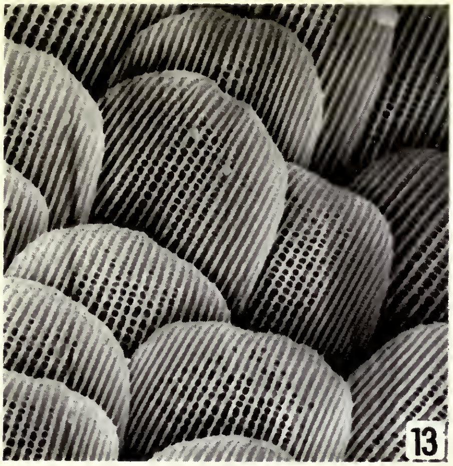
PLATE 3

FIGS 13–18. (13) *Hypolycaena liara* H. H. Druce, male: scent scales of fore wing brand (×450, neg. E9/122); (14–16) *Catapaecilma major* H. H. Druce, male: (14) surface detail of purple top scale showing 'pepper-pot' structure (×3,900, neg. E8/223); (15) swollen portion of fore wing vein 1 showing short, wavy hair scales (×195, neg. E8/218); (16) detail of hair scale and socket from same area (×1,950, neg. E8/216); (17 & 18) *Anthene liodes* (Hewitson), male: (17) part of fore wing showing purple top scales overlying fuscous under scales (×470, neg. E7/353); (16) detail of purple top scale of same showing socket and 'pepper-pot' structure (×2,300, neg. E7/355).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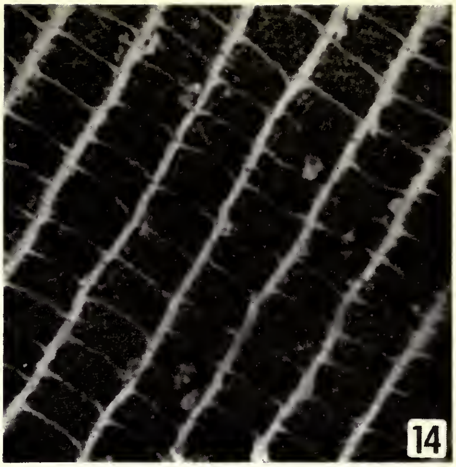
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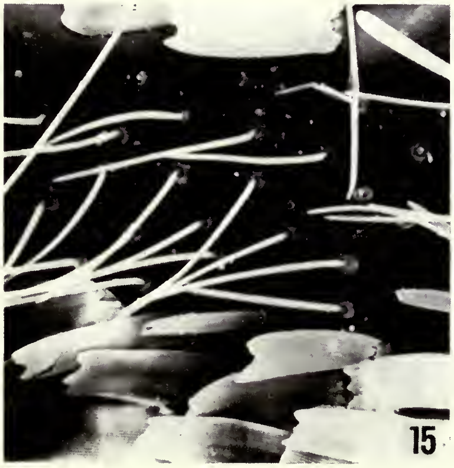
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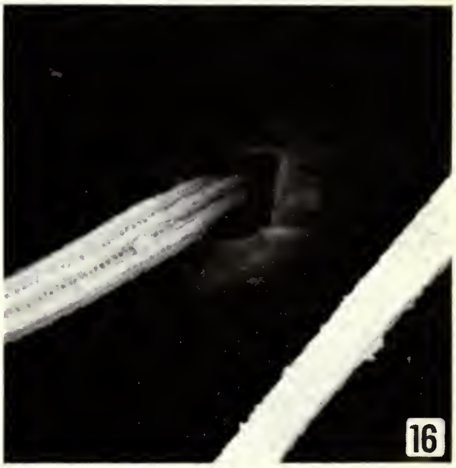
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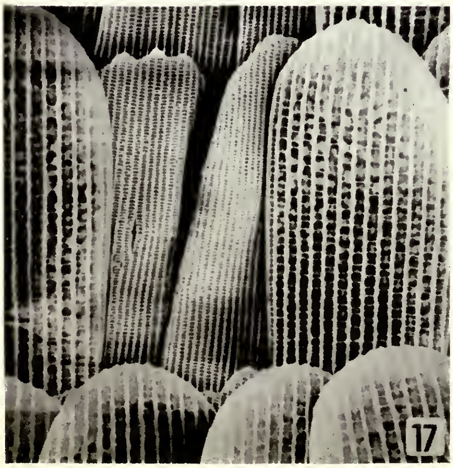
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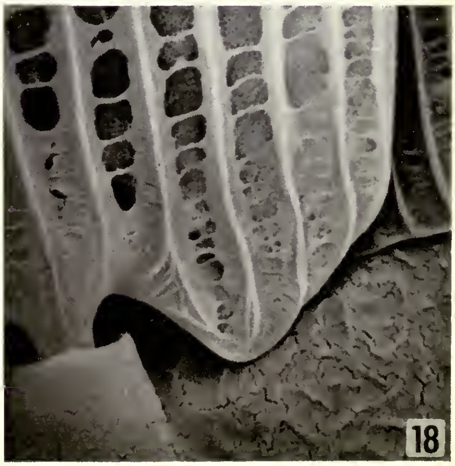
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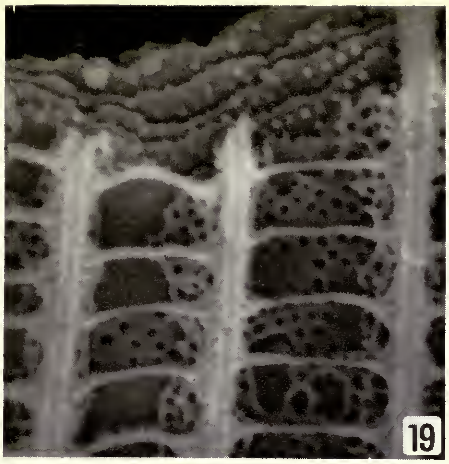
PLATE 4

Figs 19–24. (19) *Arhopala meander* Boisduval, male: fragment of purple top scale showing internal lamellar structure (×8,000, neg. EM5/373; electronmicrograph: B. S. Martin); (20–22) *Niphanda tessellata* Moore, male: (20) fore wing 'hieroglyphically marked' androconium *in situ*, with purple top scales and fuscous under scales (×925, neg. E8/267); (21) 'hieroglyphically marked' androconium showing specialized pedicel and socket (×1,400, oblique angle 75°, neg. E8/254); (22) detail of androconium showing raised 'hieroglyphs' (×1,300, neg. E8/.53); (23 & 24) *Cyprotides cyprotus pallescens* Tite, male: (23) part of fore wing showing 'dagger scales' *in situ*, with purple top scales and fuscous under scales (×240, neg. E9/266); (24) detail of same (×1,000, neg. E9/267).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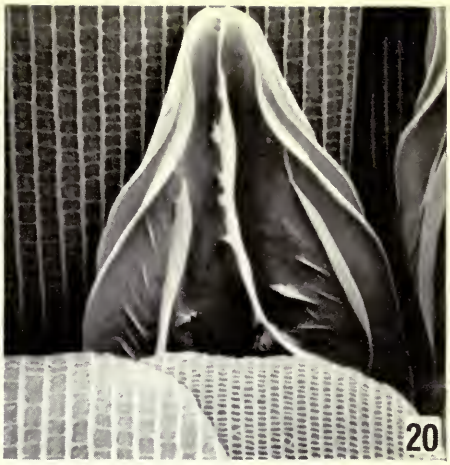
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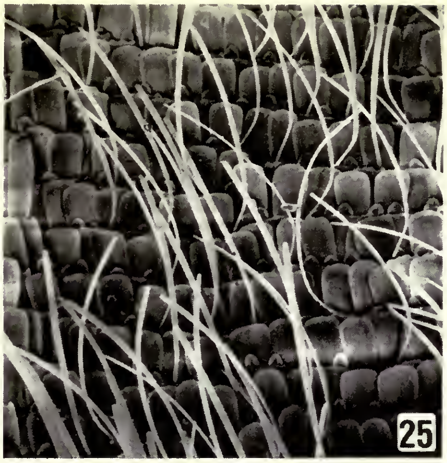
PLATE 5

FIGS 25–30. (25–28) *Polyommatus icarus* (L.), male: (25) part of fore wing showing battledore androconia and long plume scales *in situ* (×50, neg. E9/260); (26) detail of same (×260, neg. E9/261); (27) detail with overlying scales removed showing pedicel and socket of battledore androconium (×470, neg. E8/264); (28) detail of battledore androconium showing torn outer lamina, and blue top scales with 'pepper-pot 'structure (×1,600, neg. E9/264); (29 & 30) *Freyeria trochylus* (Freyer), male: (29) part of fore wing showing battledore androconium *in situ* among brown wing scales (×1,100, neg. E8/249); surface detail of battledore androconium (×5,450, neg. E8/250).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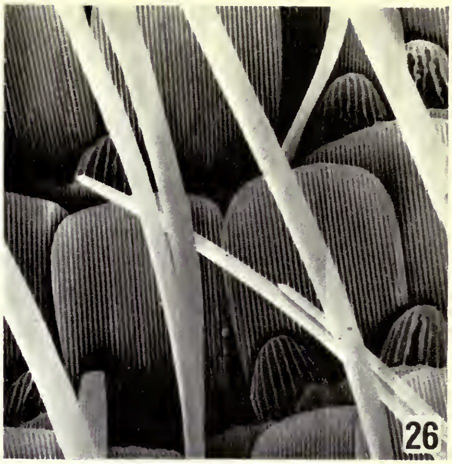
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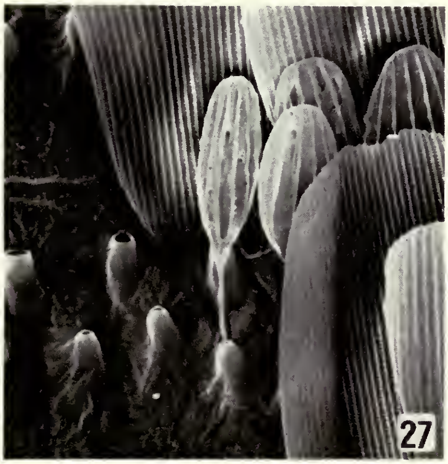
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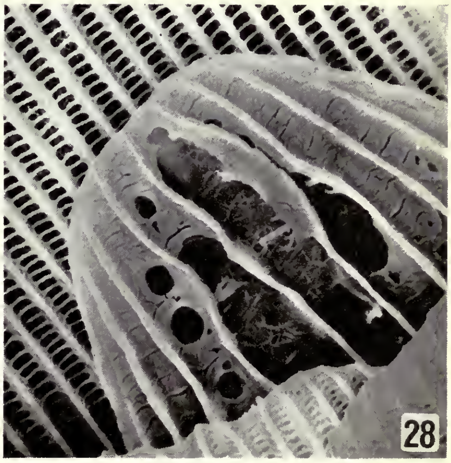
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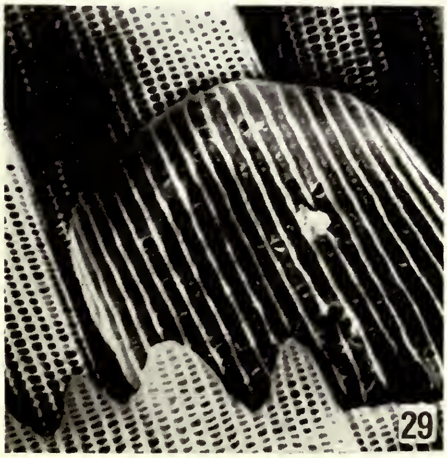
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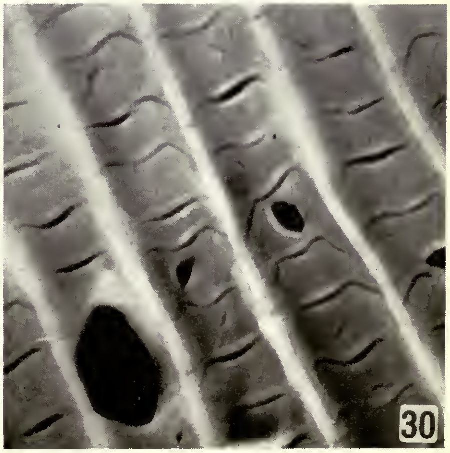
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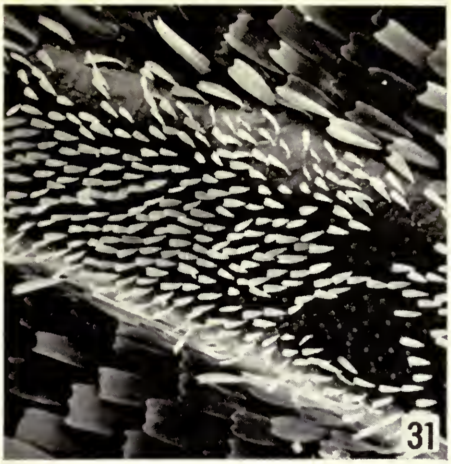
PLATE 6

FIGS 31–36. (31 & 32) *Miletus chinensis* Felder, male: (31) swollen part of fore wing vein 4 showing scent scales (×95, neg. E5/627); (32) detail of scent scales (×925, neg. E5/631); (33 & 34) *Hewitsonia boisduvalii* (Hewitson), male: (33) swollen portion of fore wing vein 1 showing wavy hair scales (×45, neg. E7/177); (34) detail of wavy hair scales (×890, neg. E7/184); (35 & 36) *Liptena tullia* Staudinger, male: (35) scales forming part of abdominal brush organ, prepared by freeze drying after maceration and dissection from dried specimen (×35, neg. E9/227); (36) surface detail of scale from brush organ, showing structure which suggests that such scales may be capable of inflation and deflation (×1,950, neg. E9/225).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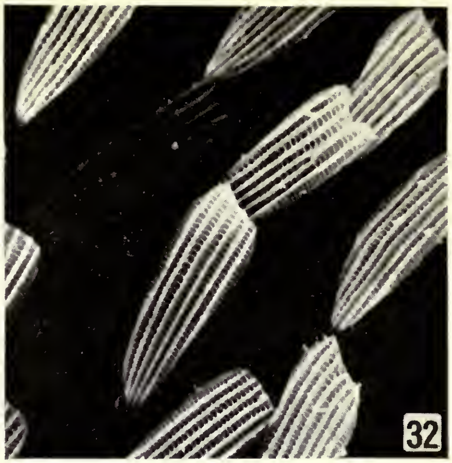
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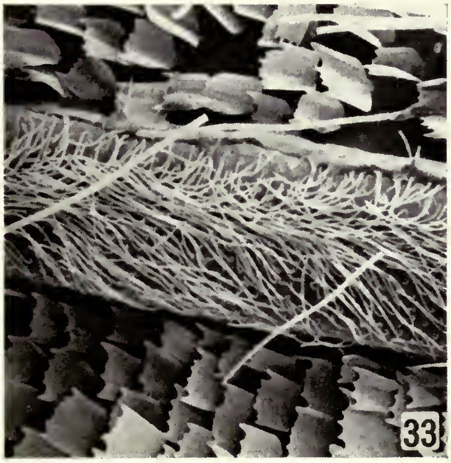
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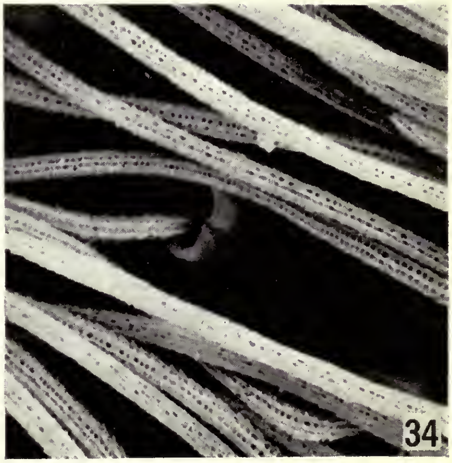
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NATURAL HISTORY

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J. B. MASON

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BY
JOYCE BARBARA MASON
Centre for Overseas Pest Research

Pp 507–560; 142 *Text-figures*; 4 *Maps*

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By JOYCE B. MASON

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SYNOPSIS

The genera *Hieroglyphus* Krauss, *Parahieroglyphus* Carl and *Hieroglyphodes* Uvarov are revised and keys are given to their species. All the genera and previously known species are redescribed. One generic and two varietal names are newly synonymized and one new species is described. Eleven lectotypes and one neotype are designated for the group.

INTRODUCTION

THE group Hieroglyphi was first mentioned by I. Bolívar (1912) for a heterogeneous assemblage of mainly unrelated genera which included *Bermiodes* Bolívar, *Hieroglyphus* Krauss and *Hieroceryx* Bolívar (= *Parahieroglyphus* Carl). Later this group-name was restricted by Uvarov (1922) to the genera *Hieroglyphus*, *Parahieroglyphus* and *Hieroglyphodes*, and he subsequently (1932) added *Miramia* Uvarov (here synonymized with *Hieroglyphus*). Analysis of the genera has revealed that they are not closely related; all that united them was their superficial similarity, especially the black pattern and coloration. The phallic complex, which exhibits the most essential characters, is completely different and characteristic for each genus. The species have not been well defined and very few illustrations of them have been given. The present revision of the group of genera was undertaken in order to sort out the confusion of species and genera which has arisen, and particularly to utilize the characters of the phallic complex (Dirsh, 1956) for this purpose. The genera are important from the economic point of view, as many of the species are major pests of rice, sugar-cane and other crops in Africa, India and the whole of South-East Asia. Information on their biology and economic importance is therefore included in brief.

ACKNOWLEDGEMENTS

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> Academy of Natural Sciences of Philadelphia (ANS); Anti-Locust Research Centre, London (ALRC); Department of Agriculture, Bangkhen, Bangkok, Thailand (DAB); Institute Español de Entomología, Madrid (IEE); Muséum d'Histoire Naturelle, Geneva (MHN); Museum für Naturkunde der Humboldt-Universität, Berlin (MNHU); Muséum National d'Histoire Naturelle, Paris (MNHN); Naturhistorisches Museum, Vienna (NM); Naturhistoriska Riksmuseum, Stockholm (NR); Natuurhistorisch Museum, Maastricht, Netherlands (NMM), Universitetets Zoologiske Museum, Copenhagen, (UZM); US National Museum, Washington, DC (USNM); Coll. Dr F. Willemse, Laurastraat 67, Eygelshoven, Netherlands (WEN).

The abbreviations given in parentheses are used for the type-depositories cited in this work, indicated with the synonomy.

I wish to thank Dr T. H. C. Taylor and Dr D. R. Ragge for reading and editing this manuscript.

THE PHALLIC COMPLEX

Dissection of the internal genitalia revealed most important characters within the genera. The epiphallus of *Hieroglyphodes* and *Parahieroglyphus* is divided (Text-figs 115, 125, 134, 142), while that of *Hieroglyphus* is not divided (Text-figs 12, 23, 36, 44, 52, 63, 74, 85, 94, 102). This seems to suggest that the two former genera are from a different evolutionary line to *Hieroglyphus* and that convergent evolution has occurred in the external characters. From the external features, however, *Hieroglyphodes* is more similar to *Hieroglyphus* than to *Parahieroglyphus*. We may therefore conclude that the group Hieroglyphi is a heterogeneous assemblage, based solely on external similarity. On the basis of the phallic complex *Hieroglyphus*, *Parahieroglyphus* and *Hieroglyphodes* are not related so closely as previous authors have suggested.

The endophallus was found to be very difficult to dissect, as in some cases the apical and basal valves of the penis appeared to be connected by a very thin flexure-like structure, but not the usual flexure found in other Acrididae. As the thread-like connection was so thin it was difficult to decide, even under the highest magnification used (× 100), whether the valves were connected or not. Many specimens were dissected in each species and no definite conclusion was reached. The penis valves were therefore dissected longitudinally in every species and examined from the inner side. In the majority of cases the valves appeared to be separate, and have been so drawn. However, in *Hieroglyphus concolor* (Walker) the large type-specimen was dissected, and the valves appeared to be connected; I have illustrated this by dotted lines in the figure (Text-fig. 35). The problem of whether a flexure exists or not can only be solved when the whole subfamily Hemiacridinae is revised. All genitalia were originally drawn under a magnification of × 100.

It must be stressed that in some Hemiacridinae, particularly in some Madagascan genera, there is a tendency to form a weak to well developed flexure (Dirsh & Descamps, 1968).

THE FEMALE SUBGENITAL PLATE AND OVIPOSITOR VALVES

It was found that most of the species differ in the structure of the female subgenital plate and the ventral ovipositor valves. In some species the subgenital plates are trilobate and the lateral lobes are of different size and shape from the median one; some have a median lobe only. The plate may possess parallel ridges with or without spines. In each case the plate was removed and slightly flattened before the external characters were drawn. These characters, especially in combination with the lower part of the ovipositor valves, can be used to identify the females.

The ventral side of the lower ovipositor valves differs in the genera and species. Sometimes they are thin and elongated but they may be shorter and stouter; in some species a well developed ridge is present across the valves, and in others the teeth on the valves are elongate and sharp, or they may be rounded.

HISTORY OF THE GENERA

The genus *Hieroglyphus* was first described by Krauss in 1877 for the species *H. daganenis* and the variety *H. daganensis* var. *abbreviata*. Kirby (1910) recorded four species in his catalogue. Bolívar (1912) described the group Hieroglyphi, but this included other unrelated genera besides those which were considered later to belong to this group; the genus *Hieroglyphus* was redescribed, three new species were added and seven were included in the key. Carl (1916) redescribed the genus again and added three new species. Uvarov (1922) published a review of *Hieroglyphus* and its nearest allies. He disregarded some of the genera that Bolívar had previously included but added to the group Hieroglyphi the genera *Parahieroglyphus* and *Hieroglyphodes*; he also redescribed *Hieroglyphus* (and all its species), synonymized some species, and described one new one and a variety. His key contained eight species.

The genus *Parahieroglyphus* was described by Carl in 1916 for the species *P. bilineatus*, and he associated it with *Hieroglyphus*. In 1922 Uvarov redescribed the genus and added the species *P. colemani*.

The genus *Hieroglyphodes* was described by Uvarov in 1922 for the species *H. assamensis*. In 1961 Roy added a second species, *H. occidentalis*.

KEY TO THE GENERA

1 Male supra-anal plate narrower than long, with sides excurved towards apex (Text-fig. 1). Male cercus of medium size, simple, slightly curved and gradually narrowing to apex, bifurcate, or bilobate (Text-figs 18, 98, 80) **HIEROGLYPHUS** Krauss (p. 512)

– Male supra-anal plate broader than long, with straight sides narrowing to acute-angular apex or trilobate at apex, with very small middle lobe (Text-figs 3,2). Male cercus large, upcurved at base and with expanded apex, or trilobate (Text-figs 110, 128) 2

2 (1) Pronotum with shallow sulci. Male supra-anal plate with straight sides, narrowing to acute-angular apex (Text-fig. 3). Male cercus very large, trilobate, with very large expanded middle lobe (Text-figs 110, 121). **PARAHIEROGLYPHUS** Carl (p. 547)

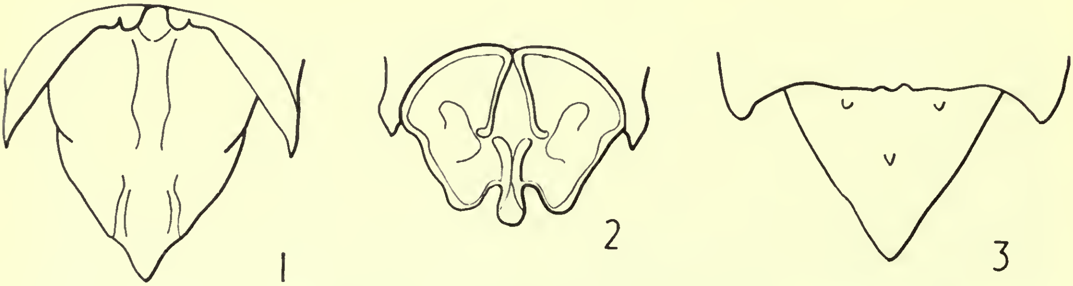
– Pronotum with deep sulci. Male supra-anal plate trilobate with small middle lobe (Text-fig. 2). Male cercus large, upcurved at base and with expanded apex (Text-figs 128, 138) . . . . . **HIEROGLYPHODES** Uvarov (p. 552)

HIEROGLYPHUS Krauss, 1877

Hieroglyphus Krauss, 1877 : 41. Type-species, by monotypy, *Hieroglyphus daganensis* Krauss, 1877.

Miramia Uvarov, 1932 : 224. Type-species, by monotypy, *Miramia perpolita* Uvarov, 1932. **Syn. n.**

Medium to large size. Comparatively slender to robust. Integument coarsely or finely pitted. Sparsely or densely hairy on ventral surface. Antenna filiform, longer than head and pronotum together, with 27–30 segments. Fastigium of vertex with slight depression in front of a bow-shaped transverse furrow, broader than long, with an obtuse-angular apex; weak carinula of vertex present or absent; frontal ridge with moderately deep or shallow sulcus, parallel-sided or widening towards base and narrowing towards apex. Pronotum



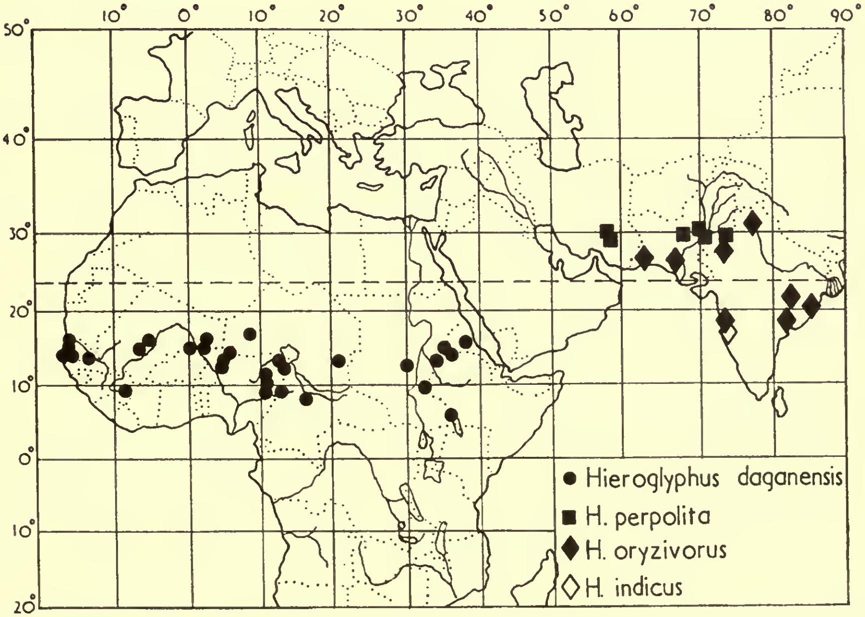
FIGS 1–3. Male supra-anal plate. 1, *Hieroglyphus banian* (F.); 2, *Hieroglyphodes occidentalis* Roy; 3, *Parahieroglyphus bilineatus* (I. Bolívar).

cylindrical; median carina weak, linear or obliterated behind first sulcus or in metazona; three or four broad or narrow sulci present; lateral carinae absent; metazona shorter than prozona; its posterior margin obtuse-angular or rounded. Prosternal process conical or bifurcate. Tegmina and wings fully developed or shortened. Radial area of tegmen with several regular thickened, transverse, stridulatory veinlets, moderately developed (except in micropterous species). Tubercles present on anterior margin of tegmen and in the precostal, costal and subcostal area (the function of these tubercles is unknown). Hind femur slender to moderately robust. External apical spine of hind tibia present. Arolium moderately large. Supra-anal plate longer than its width, narrowing towards apex, apex elongate subacute; elongate ridges present with shallow median sulcus. Cercus simple or bifurcate with subacute pointed or obtuse apex. Subgenital plate elongate with subacute or emarginate apex.

Phallic complex. Apical and basal valves of penis divided or with tendency to form a very thin connection between the valves. Basal valves of penis moderately robust to robust. Ectophallic membrane with ventral sclerotization. Epiphallus large, bridge-shaped, not divided, with small to moderately large ancorae and small or large lophi.

Ovipositor slender to moderately robust with curved valves; lower valve with two teeth well or poorly defined. Female subgenital plate with median lobe only or trilobate with medium lobe longer than the lateral lobes.

The genus *Miramia* was described by Uvarov as being related to *Hieroglyphus*. He separated the genus on the following characters, 'the frontal ridge with the sides straight, gradually divergent downwards, sulcate throughout. Lateral margins of fastigium of vertex thick convex. Pronotum without any trace of median keel. Prosternal spine straight, transverse in section, with the apex bituberculate. Male cerci simple. Female subgenital plate trilobate apically.' However, now that more material is available for study from Pakistan, I have found that the pronotum has a weak median carina and the female subgenital plate is trilobate in other



MAP 1. Distribution of *Hieroglyphus daganensis, H. perpolita, H. oryzivorus and H. indicus.*

species of *Hieroglyphus*; these characters therefore cannot be considered as generic. The frontal ridge is variable and the other characters are unimportant and of no generic value. Dissection of the phallic complex also verifies that *perpolita* is typical of *Hieroglyphus*, with the valves of the cingulum being much longer than the apical valves of the penis and narrowing at the apex. The simple male cercus, the presence of the two ridges on the female subgenital plate (not mentioned by Uvarov) and the fact that the lower valves of the ovipositor possess a ridge across the ventral surface (not mentioned by Uvarov) places this species into the first group of species of *Hieroglyphus*. The genus *Miramia* cannot therefore be separated as a distinct genus.

KEY TO THE SPECIES

1 Male cercus with apex simple (Text-figs 6, 58) 2

– Male cercus with apex bifurcate or bilobate (Text-figs 98, 80, 88) 8

2 (1) First and third sulci on sides of pronotum not joined by black band (Text-figs 4, 29) or, if joined, then also with irregular stripes connecting all sulci on dorsum (Text-fig. 46). Posterior margin of pronotum obtuse-angular (Text-figs 4, 29). Male cercus straight or downcurved at apex (Text-figs 6, 30). . . . 3

– First and third sulci on sides of pronotum joined by black band, without irregular stripes connecting all sulci on dorsum (Text-figs 56, 68). Posterior margin of pronotum rounded (Text-figs 56, 68). Male cercus upcurved at apex (Text-figs 58, 70) 7

3 (2) Apex of male cercus not oblique (Text-figs 6, 18, 30) 4

– Apex of male cercus oblique (Text-figs 40, 48) 6

4 (3) Pronotum with four broad black sulci crossing dorsum (Text-fig. 4). Prosternal process bituberculate (Text-fig. 8). . . . . . ***perpolita*** Uvarov (p. 515)

– Pronotum with three sulci crossing dorsum (Text-figs 16, 29). Prosternal process conical (Text-fig. 19) 5

5 (4) Body moderately slender. Apex of male cercus subacute, much longer than supra-anal plate (Text-fig. 17). Female subgenital plate with two smooth ridges (Text-fig. 25). . . . . ***annulicornis*** Shiraki (p. 517)

– Body robust. Male cercus slightly longer than supra-anal plate (Text-fig. 31). Female with two spiny ridges on the subgenital plate (Text-fig. 37) ***concolor*** (Walker) (p. 521)

6 (3) Pronotum with sides only slightly expanded in metazona; dorsum without characteristic pattern connecting all sulci by irregular stripes (Text-fig. 38). Male cercus with stout subacute apex, roundly oblique on upper margin (Text-fig. 40). Female subgenital plate with two spiny ridges (Text-fig. 45) ***africanus*** Uvarov (p. 524)

– Pronotum with sides markedly expanded in metazona; dorsum with characteristic black pattern connecting all sulci by two irregular stripes (Text-fig. 46). Male cercus with elongate acute apex, oblique on upper margin (Text-fig. 48). Female subgenital plate without parallel ridges (Text-fig. 54) ***nigrorepletus*** Bolívar (p. 526)

7 (2) Male subgenital plate with emarginate apex (Text-fig. 57). Female subgenital plate trilobate, with relatively large lateral lobes and median lobe longer than lateral (Text-fig. 65). Epiphallus with lobiform lophi and no second lobe facing towards the centre of the bridge (Text-fig. 63). (African species). ***daganensis*** Krauss (p. 531)

– Male subgenital plate with truncate apex (Text-fig. 69). Female subgenital plate trilobate with very small lateral lobes and small median lobe (Text-fig.

75). Epiphallus with lobiform lophi and with an extra smaller lobe facing towards the centre of the bridge (Text-fig. 74). (Indian species). **oryzivorus** Carl (p. 534)

8 (1) Male cercus bilobate or shallowly bilobate (Text-figs 80, 88). Lower valves of ovipositor short and stout, the external lateral projection of lower valve rounded, and ill defined (Text-figs 86, 95) 9

– Male cercus bifurcate, relatively slender, with upper branch of fork recurved anteriorly towards head and lower branch elongate and acute (Text-fig. 98). Lower valves of ovipositor long and slender with external lateral projection well-defined and acute (Text-fig. 105) . . . . . **banian** F. (p. 540)

9 (8) Micropterous (Text-fig. 81). Male cercus shallowly bilobate, relatively narrow with upper lobe shorter than lower, both lobes rounded (Text-fig. 80) **indicus** sp. n. (p. 536)

– Macropterous. Male cercus bilobate, broad with upper lobe rounded or with irregular edge, and lower lobe thin, elongate, pointed at apex (Text-figs 88, 89) **tonkinensis** Bolívar (p. 538)

Descriptions of the Species

Hieroglyphus perpolita (Uvarov, 1932) **comb. n.**

(Text-figs 4–15, Map 1)

Miramia perpolita Uvarov, 1932 : 224. Holotype ♂, Iran: South-east, Basman to Tarab, Eastern Kerman, 9.viii.1898 (Zoological Institute, Leningrad).

♂. Large. Moderately robust. Integument shallowly pitted, shiny. Densely hairy on ventral surface of abdomen. Antenna 28-segmented. Fastigium of vertex twice as broad as long, frontal ridge widening downwards, shallowly sulcate. Pronotum cylindrical; dorsum crossed by four wide sulci; posterior margin of pronotal disc widely obtuse-angular; prosternal process bifurcate. Mesosternal interspace narrowly open; metasternal interspace closed.

Tegmina and wings extending beyond end of abdomen. Hind femur moderately robust. Supra-anal plate angular, with obtuse apex. Cercus simple, thick, longer than supra-anal plate, slightly down-curved, with subacute apex. Subgenital plate with subacute apex.

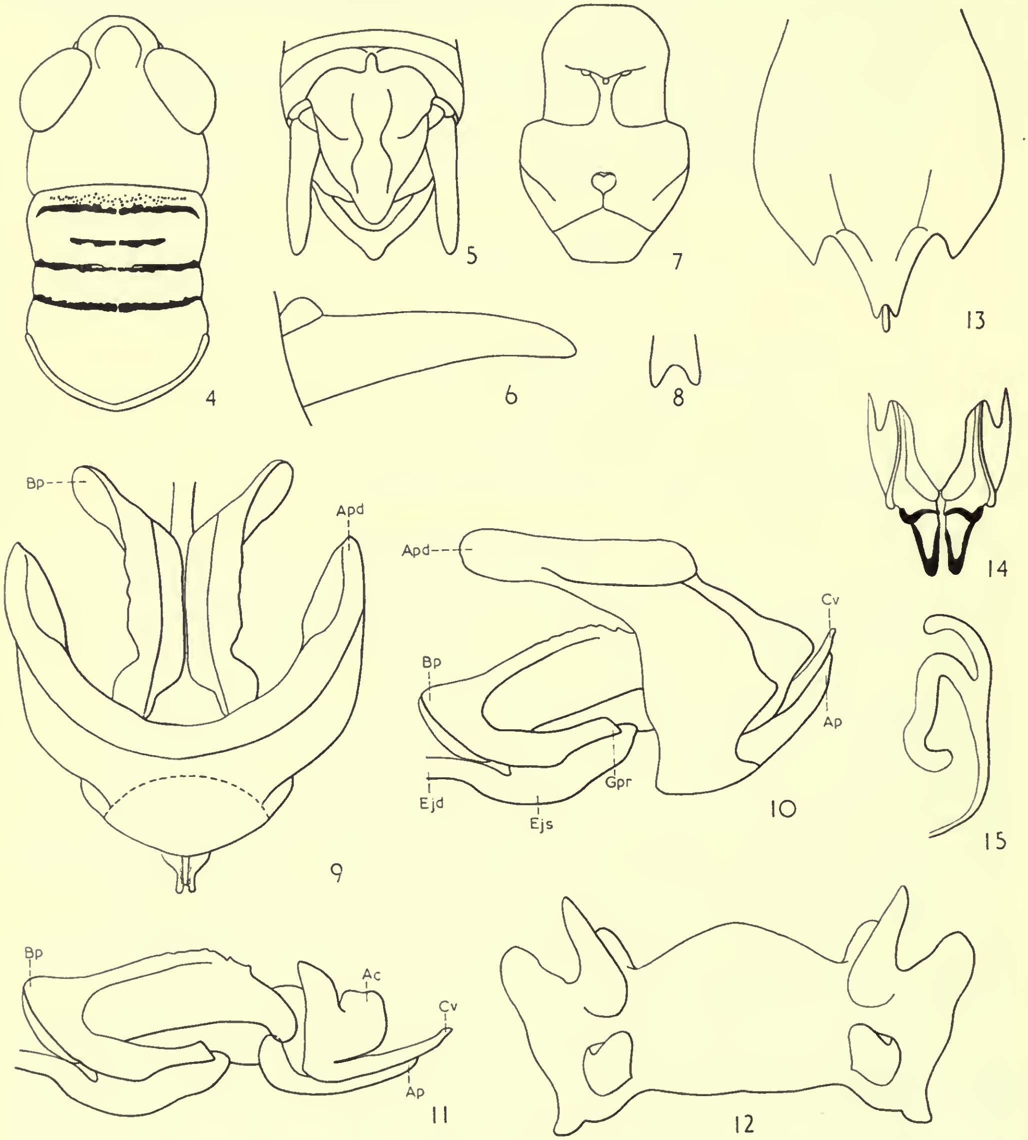
Phallic complex. Apical valves of penis narrow, shorter than valves of cingulum, narrowing at apex; valves of cingulum slightly upcurved, with subacute apex; basal valves of penis robust, slenderly expanded at end; dorsal ridge of valves smooth at basal end; gonopore process elongate, narrowing towards truncate apex; zygoma of cingulum narrow; rami broad; apodemes shorter than basal valves of penis, broad with obtuse apices. Epiphallus broader apically than basally, ancorae of medium length, turning outwards; lophi elongate, not lobe-shaped, pointed inwards, with subacute apices.

General coloration green or greenish buff, with yellowish buff patches; sulci on pronotum black; wings hyaline, veins green, grey or brownish buff; inner and lower side of hind femur orange-red; hind tibia bluish grey, with black band at base; spines buff, with black tips, base of tarsi black with bluish tinge.

♀. As the male, but much larger and more robust. Differs in the fastigium of vertex being approximately three times as broad as long; subgenital plate trilobate, with outer lobes shorter than median lobe; median lobe with two ridges converging towards apex, ridges relatively smooth with a few small spines; lower valves of ovipositor with external lateral projection forming ridge across ventral surface.

Measurements (mm).	Length of body	Length of pronotum	Length of tegmen	Length of hind femur
Male	26·6–41·2	8·2–8·4	30·4–32·1	17·4–17·5
Female	38·7–52·5	9·1–13·0	29·4–44·4	18·2–24·9

This species differs from *H. annulicornis* in that the cercus is straight, not incurved, with the apex less downcurved. There are four sulci on the pronotum. The prosternal tubercle is bifurcate, the lobes of the epiphallus are pointed, and the female subgenital plate is trilobate.



FIGS 4–15. *Hieroglyphus perpolita* (Uvarov). Male, 4, head and pronotum, from above; 5, end of abdomen, from above; 6, cercus, lateral view; 7 meso- and metasternum; 8, prosternal tubercle, front view; 9, phallic complex, from above, with epiphallus and ectophallic membrane removed; 10, same, lateral view; 11, endophallus, lateral view; 12, epiphallus. Female, 13, subgenital plate, ventral view; 14, lower valves of ovipositor, ventral view (paratype); 15, spermatheca.

MATERIAL EXAMINED

IRAN: Djiroft, Bosham, vi. 1962, 1 ♂; Basman-Tarab, Prov. Kerman, Zarudry. 9.viii.1898, 1 ♀ (paratype). PAKISTAN: Harnai, 12.viii.1931 (*Y. R. Rao*), 2 ♀. 1.viii. 1931, 1 ♀; nr Multan, 3.vii.1963 (*G. Popov*), 1 ♀; Loralai, 7.viii.1931, 1 ♀; Bahawalpur, Yazman, 7–8.vii.1963 (*G. Popov*), 3 ♀.

Hieroglyphus annulicornis (Shiraki, 1910)

(Text-figs 16–28, Map 2)

Oxya annulicornis Shiraki, 1910 : 57. 1 ♂, 1 ♀ syntypes, TAIWAN (lost). NEOTYPE ♂, TAIWAN: Takao, 6.viii.1907 (*H. Sauter*) (BMNH), here designated [examined].

Hieroglyphus formosanus I. Bolívar, 1912 : 55. Holotype ♂, TAIWAN: Ku-Sia (IEE, Madrid) [examined]. [Synonymized by Uvarov, 1922 : 234.]

Hieroglyphus tonkinensis Carl, 1916 : 479 (nec *H. tonkinensis* I. Bolívar, 1912). Holotype ♀, VIETNAM (NORTH): Than-Moi, vi-vii (*H. Fruhstorfer*) (MHN, Geneva) [examined]. [Synonymized by Uvarov, 1922 : 234.]

♂. Medium size. Moderately slender. Integument coarsely pitted, shiny, especially pronotum. Densely hairy on ventral surface of abdomen. Antenna 29—segmented. Fastigium of vertex twice as broad as its length; median carinula of vertex weak or absent; frontal ridge with moderately deep sulcus. Median carina of pronotum present or absent; three sulci crossing dorsum; posterior sulcus broader and deeper than other two; posterior margin of metazona, slightly wider than right angle. Prosternal process conical. Mesosternal interspace slightly open; metasternal interspace closed.

Tegmina and wings reaching end of abdomen. Hind femur slender. Supra-anal plate with small narrow apex. Cercus simple, much longer than supra-anal plate, down-curved and incurved, narrowing to subacute apex. Subgenital plate with subacute apex.

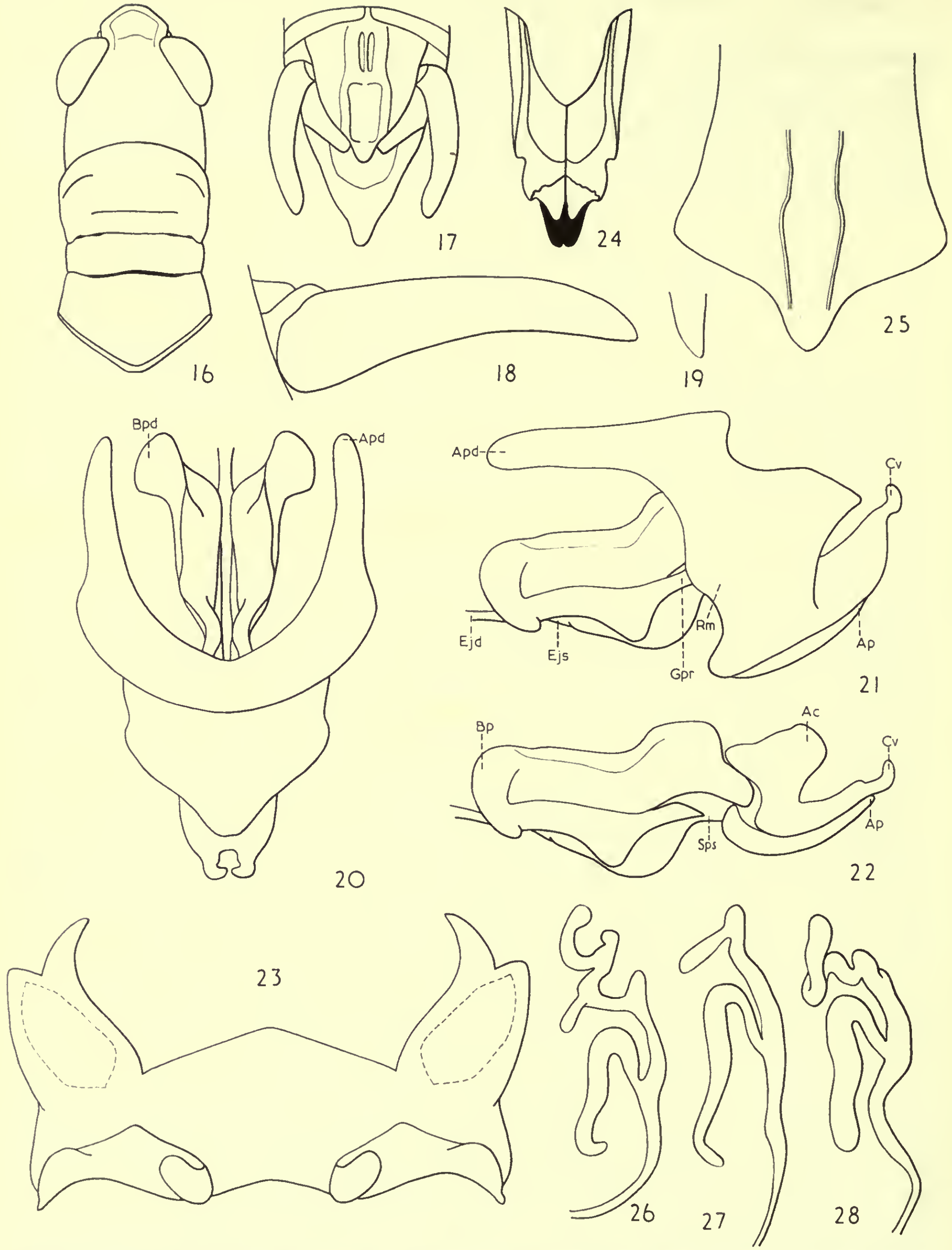
Phallic complex. Apical valves of penis much shorter than valves of cingulum, narrowing at apex; valves of cingulum narrowing, upcurved and incurved at apex; basal valves of penis moderately robust, expanded at end; dorsal ridge of valves smooth; gonopore process elongate with expansion in middle and narrowing towards apex; zygoma of cingulum moderately broad; rami broad; apodemes of cingulum approximately the same length as basal valves of penis, relatively narrow with subacute apices. Epiphallus broad near ancoras, with two regions of weaker sclerotization; lophi with inner lobe curving outwards.

General coloration green-buff or greenish buff, with yellowish brown patches; sulci on pronotum black, the posterior one broader than the others; wing hyaline, veins dark brown and pale buff; hind knee with black patch on inner side continuing on tibia; base of tibia and tips of spines black, rest of tibia pale green or buff (probably faded).

♀. As the male, but larger. Differs in that fastigium of vertex is three times as broad as long; mesosternal interspace more open than in male; subgenital plate with subacute median lobe and two smooth wavy, parallel, ridges sometimes with spines; lower valves of ovipositor with external lateral projection forming a deep ridge across ventral surface of valves; spermatheca large, apical diverticulum long, narrow, curving back at basal end, preapical diverticulum long, narrow, with one small branch curving backwards.

Measurements (mm).

	Length of body	Length of pronotum	Length of tegmen	Length of hind femur
Male	33·8–45·0	7·3–9·0	26·7–33·0	18·1–21·7
Female	42·5–62·3	8·3–12·9	29·4–40·1	19·6–27·8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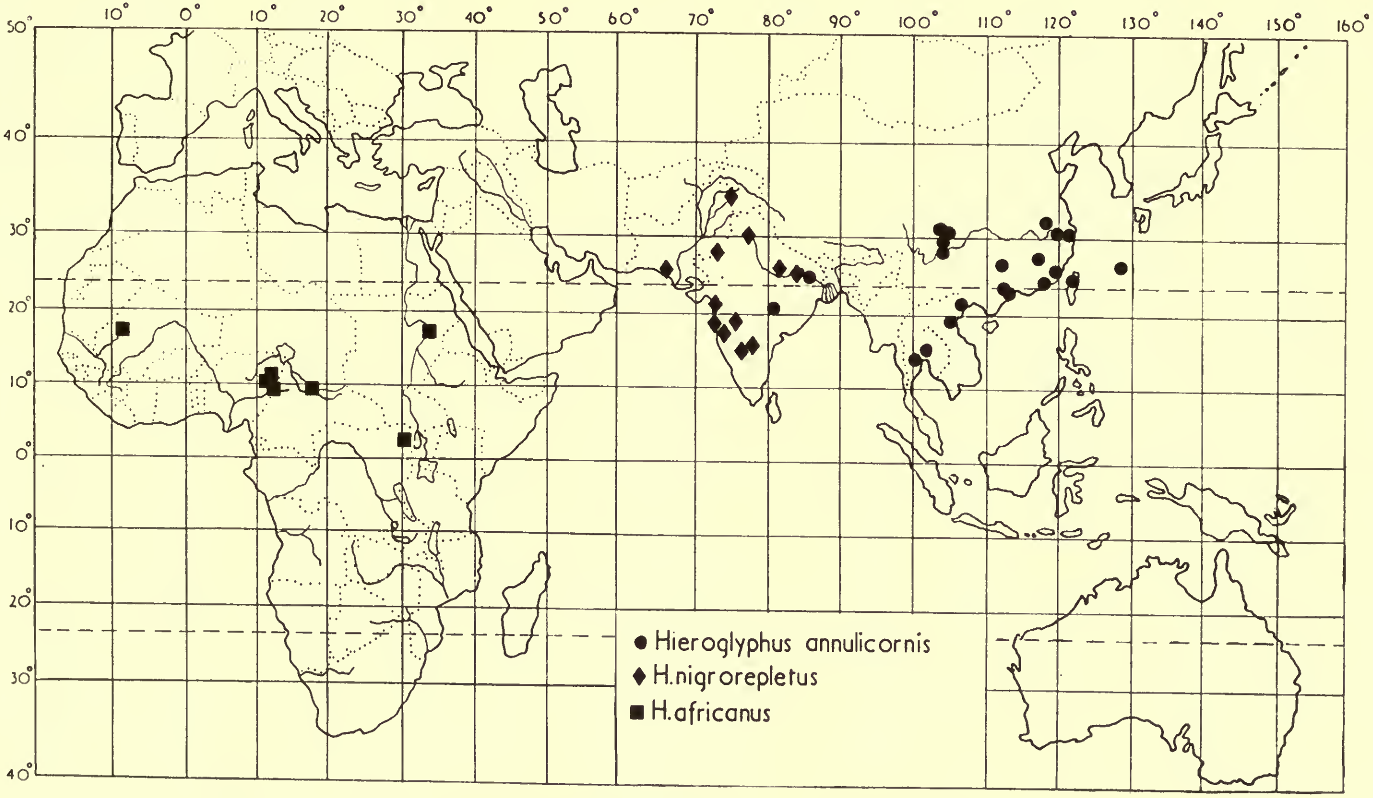
FIGS 16–28. *Hieroglyphus annulicornis* (Shiraki). Male, 16, Head and pronotum, from above; 17, end of abdomen, from above; 18, cercus, lateral view; 19, prosternal tubercle, lateral view; 20, phallic complex, from above, with epiphallus and ectophallic membrane removed; 21, same, lateral view; 22, endophallus, lateral view; 23, epiphallus. Female, 24, lower valves of ovipositor, ventral view; 25, subgenital plate, ventral view; 26–28, variation of spermatheca.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● Hieroglyphus annulicornis
◆ H.nigrorepletus
■ H.africanus

MAP 2. Distribution of *Hieroglyphus annulicornis, H. nigrorepletus and H. africanus.*

Shiraki (1910) attributed the name *Oxya annulicornis* to Matsumura, but the relevant description by Matsumura was published after that of Shiraki. The work of Shiraki, which has the date 1910 on the cover, gives the date 4 May 1909. Matsumura's first description is dated 28 July 1910, and the species should therefore be attributed to Shiraki. Uvarov (1922) synonymized *H. formosanus* Bolívar, 1912 and *H. tonkinensis* Carl, 1916 with *H. annulicornis* (Shiraki, 1910), and with this the present author agrees.

This species belongs to the group containing *H. perpolita, H. concolor, H. africanus* and *H. nigrorepletus*. It is most closely related to *H. concolor,* which it resembles in the simple form of the male cercus, the shape of the supra-anal plate and the long upcurved valves of cingulum. The female is a member of the group by the presence on the plate of two parallel ridges; the external lateral projection of the ovipositor valves extends to a deep ridge crossing the ventral surface. *H. annulicornis* differs from *H. concolor* in that the male cerci are much longer, and the epiphallus broader, and that in the female the two ridges on the subgenital plate are smooth and do not possess large spines.

It seems certain that all Shiraki's type-material is lost. It has therefore been impossible to trace the syntypes of *Oxya annulicornis* and so I have designated a neotype.

MATERIAL EXAMINED

CHINA: 1896 (*R. P. J. Joanini*), 1 ♂; 1893 (*R. P. J. Soames*), 2 ♀; Szechuan, Friedrich, Bebe Bez, Chunking, 1929–31, 4 ♂, 3 ♀; Suifu, 1920 (*D. C. Graham*), 1 ♀; Kuanshien, 1000′–2200′ (*D. C. Graham*), 1 ♀; 1600′–2200′, 27–29.viii.1934, 1 ♀; 3000′, 2 ♀; Chunking, viii. 1934, 2 ♀; 1912 (*W. A. Maw*), 2 ♂; Mt Omei, Baian-Kara, Ula Range, 2500′, 6.viii.1929, 1 ♀; Kwanhsien, 8.viii.1930, 1 ♂, 1 ♀; Amoy, 1 ♀; (*C. F. Wu*), 1 ♂, Nanking, 1932 (*T. L. Tsou*), 1 ♂, 1 ♀; 1933, 2 ♂, 29.vii.1924 (*N. S. Chang*), 1 ♀; Hong Kong, 1911 (*F. W. Terry*), 1 ♀; Shanghai, viii. 1935, 2 ♂, 20.viii. 1933, 1 ♂; Kaing Su, 10.x.1919 (*E. Suenson*), 1 ♀; 25–28.viii.1928 (*E. Suenson*), 3 ♂, 8 ♀; Kolthoff, 3 ♂; Chekiang, 17.viii.1933, 1 ♀; Hangtcheou, 1925 (*A. Pichon*), 2 ♀; Fukien, Foochow (*C. R. Kellog*), 2 ♂; 1923 (*C. R. Kellog*), 2 ♂; 1935 (*M. S. Yang*), 1 ♂; Soochow (*C. F. Wu*), 1 ♂; 3–11.v.1918 (*E. Suenson*), 1 ♂, 1 ♀; Kiang-Si, 1875 (*A. David*), 1 ♀; Fukien, Shaowu, 500 m, 24.viii.1937 (*J. Klapperich*), 1 ♀; Chatabon (*S. S. Flower*), 1 ♀. HONAN ISLAND: Canton, 28.vi.1933 (*W. E. Hoffmann*), 1 ♂. THAILAND: Lop Buri, 14.v.1964 (*C. Pranarttha*), 1 ♀; Nakhon Ratchasima, 24.vi.1962 (*P. Pholboon*), 1 ♂, 2 ♀. VIETNAM (NORTH): Hanoi, 1911 (*G. Dupouy*), 1 ♀; Than-Moi, vi—vii. (*H. Fruhstorfer*), 2 ♀, 10.xii.1901, 1 ♀, 2–3000′ (*H. Rolle*), 2 ♀; Bas, 1899 (*Dr Laboulbène*), 1 ♀. TAIWAN: Tzkao, 5.vii.1907 (*H. Sauter*), 1 ♂; 14.vii.1907 (*H. Sauter*), 1 ♂, 6–10, viii.1907 (*H. Sauter*), 6 ♂, 2 ♀; Houli, Taichung, 18.viii.1967, Ching-yi Lee and Key Ming Ho, 1 ♂. JAPAN: Ryukyu Is, Ishlgaki Id, Luchu Ida, v. 1910 (*U. C. Thompson*), 1 ♂. INDIA: Pusa, Bihar, 26.vii.1916 (*Fletcher*), 1 ♂; Central Provinces, Raipur, 2 ♀.

BIONOMICS. There is one generation a year. The hoppers hatch in April or May. The females have one more instar than the males. They become adult about the end of June. Roffey (unpublished MS) states that in Thailand, the adults occur between June and November. The dry season is spent in the egg-stage, as in *H. banian*.

ECOLOGY. In Taiwan the nymphs occur on the grass *Miscanthus* (Takahashi, 1938). Roffey (unpublished MS) states that this species appears to occupy similar habitats to those of *H. banian*: that is, areas of upland crops and the surrounding graminaceous vegetation. It feeds on the following plants:

Bambusa spp. (Takahashi, 1938)
Canna indica L. (Mishchenko, 1952)
Durio zibethinus (Roffey, unpublished MS)
Imperata cylindrica (Takahashi, 1938)
Miscanthus spp. (Takahashi, 1938)
Musa sp. (Banana) (Roffey, unpublished MS)
Oryza sativa (Takahashi, 1938; Roffey, unpublished MS)
Phragmites sp. (Takahashi, 1938)
Saccharum officinarum (Takahashi, 1938; Roffey, unpublished MS)
Zea mays (Takahashi, 1938; Roffey, unpublished MS)

ECONOMIC IMPORTANCE. This species sometimes causes serious damage to sugar-cane in southern Formosa (Takahashi, 1938). In 1938, over 80,000 hoppers per acre were recorded in the cane-fields in June. Rainfall exercised some control on the hoppers and outbreaks may be due to lack of rain in that month. Tinkham (1940) reports that the species is of considerable economic importance as it feeds on rice, sugar-cane, bamboo and grass that surrounds gardens (thus damaging garden plants). Roffey (unpublished MS) states that in Thailand there is no evidence of its being a serious pest.

Hieroglyphus concolor (Walker, 1870)

(Text-figs 29–37, Map 3)

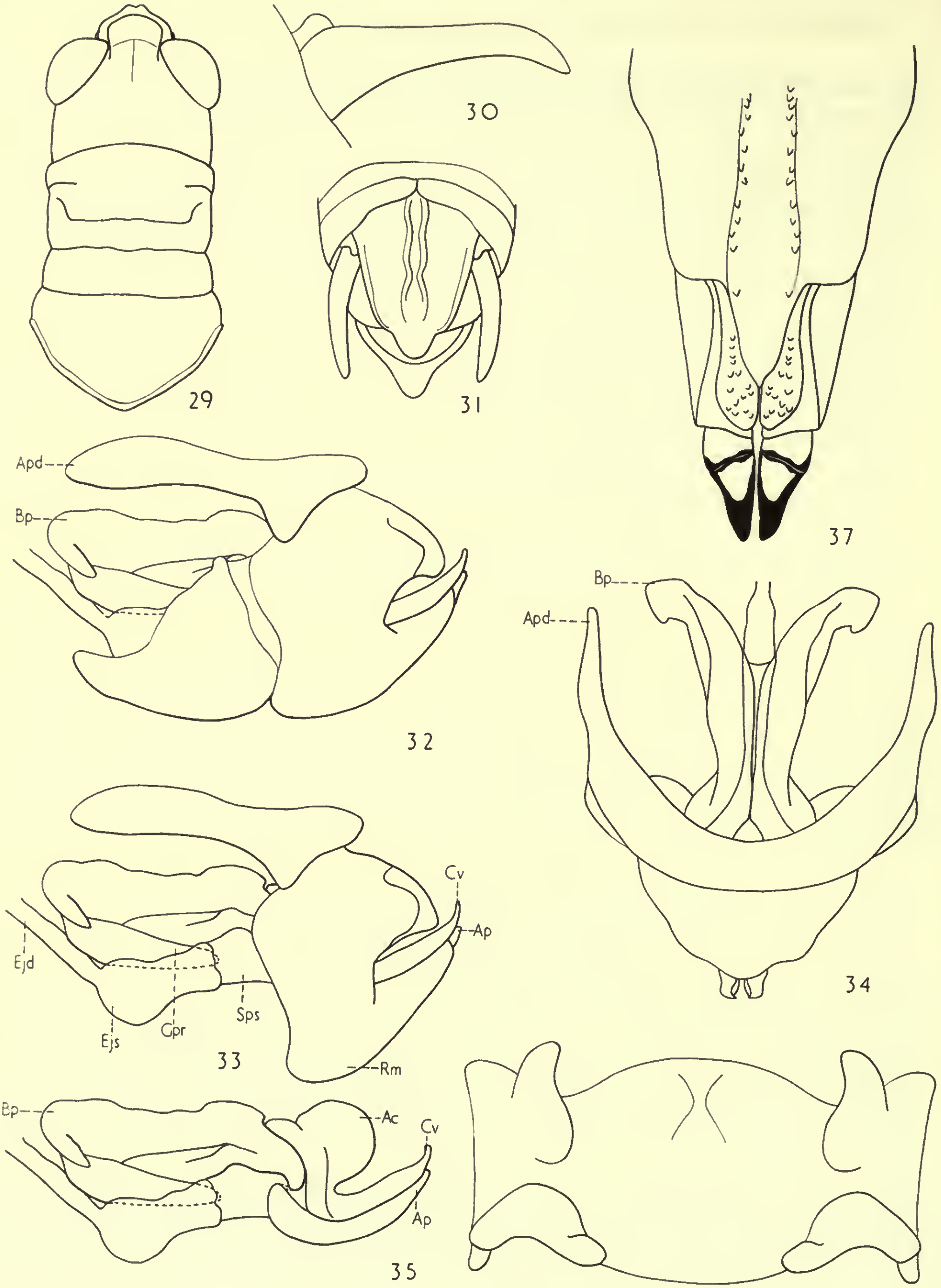
Oxya concolor Walker, 1870 : 646. LECTOTYPE ♂, N. INDIA (BMNH), here designated from 1 ♂, 1 ♀ syntypes [examined].

Hieroglyphus tarsalis Stål, 1878 : 94. LECTOTYPE ♀, INDIA: Silhet (NM, Vienna), here designated from 1 ♂, 1 ♀ syntypes [examined]. [Synonymized by Bolívar, 1912 : 54.]

Hieroglyphus citrinolimbatus Brunner von Wattenwyl, 1893 : 154. LECTOTYPE ♂, 'HIMALAYA' (NM, Vienna), here designated from 1 ♂, 1 ♀ syntypes [examined]. [Synonymized by Uvarov, 1922 : 233.]

Lectotype ♂. Large and robust. Integument moderately finely pitted. Densely hairy on distal five abdominal sternites. (Antennae broken.) Fastigium of vertex twice as broad as long; carinula of vertex weak; frontal ridge with moderately deep suclus, slightly narrowing below ocellus. Dorsum of pronotum crossed by three sulci; posterior margin slightly more obtuse than right-angle; prosternal process conical. Mesosternal interspace three times as long as wide, open; metasternal interspace closed.

Tegmina and wings extending beyond end of abdomen. Hind femur moderately slender. Supra-anal plate narrowing towards rounded attenuate apex. Cercus simple, down-curved, slightly longer than supra-anal plate. Subgenital plate with subacute apex.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FIGS 29–37. *Hieroglyphus concolor* (Walker.) Male, 29, head and pronotum, from above; 30, cercus, lateral view; 31, end of abdomen, from above; 32, phallic complex, lateral view, with ventral sclerotization of ectophallic membrane, attached and epiphallus removed; 33, same, with ventral sclerotization of ectophallic membrane and epiphallus removed; 34, same, from above; 35, endophallus, lateral view; 36, epiphallus. Female, 37, subgenital plate and lower valves of ovipositor, ventral view.

Phallic complex. Apical valves of penis much shorter than valves of cingulum, narrowing at apex, which is upcurved and incurved; basal valves of penis moderately robust, expanded at ends; dorsal ridge of valves smooth; gonopore process elongate, narrowing to obtuse apex; zygoma of cingulum moderately broad; rami broad with upcurved projection covering apical valves of penis; apodemes of cingulum slightly shorter than basal valves of penis, narrowing at apex. Epiphallus with broad bridge, ancorae short, robust; inner lobes of lophi very elongate, curving inwards.

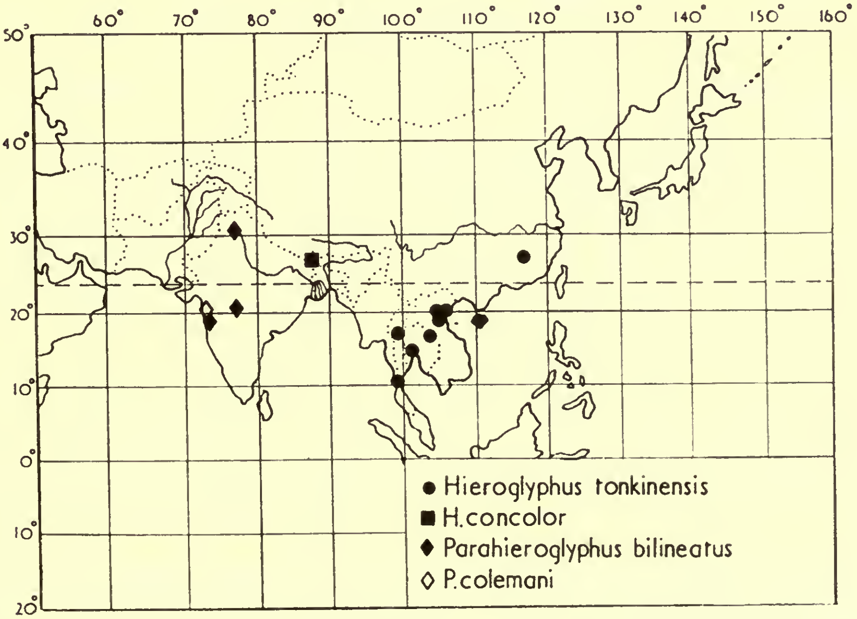
General coloration brownish buff (probably faded) with yellowish and grey patches; sulci on pronotum black, the posterior one wider than the others; wing hyaline, veins yellowish buff; hind knee with black patch on inner side continuing on tibia; base of hind tibia and tips of spines black, rest of tibia buff; basal segment of tarsi black.

♀ (paralectotype). As the male, but much larger and very robust. Differs in that the fastigium of vertex is approximately three-and-a-half times as broad as long; mesosternal interspace three-and-a-half times as long as wide; subgenital plate with subacute median lobe, and with two parallel ridges possessing large spines; lower valves of ovipositor with external lateral projection forming a deep ridge across ventral surface.

Measurements (mm).

	Length of body	Length of pronotum	Length of tegmen	Length of hind femur
Male	32·5–44·8	7·7–10·6	20·8–32·8	22·4
Female	47·4–60·9	12·0–15·8	28·0–45·0	(absent)

For differentiation from *H. annulicornis* see p. 520. It is also characterized by the black coloration of the basal part of the hind tarsi. The body size is very



Map 3. Distribution of *Hieroglyphus concolor, H. tonkinensis, Parahieroglyphus bilineatus* and *P. colemani.*

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variable; Walker's types in particular are very large and robust. The coloration varies from buff to greenish yellow, the pronotum sometimes having a yellow band on its posterior margin. All types have been examined and lectotypes designated. The author agrees with the synonymy of Bolívar (1912) and Uvarov (1922).

MATERIAL EXAMINED

SIKKIM: 3 ♂, 1 ♀. 'HIMALAYA' (*H. de Saussure*) 1 ♂, 1 ♀.

Mishchenko (1952) also records it from China and Burma.

BIONOMICS. Katiyar (1960) states that there are 62–84 eggs in a pod. Gupta & Saxena (1963) give the number per pod as 123. Egg-laying occurs in Dehra Dun, India, from the third week of July to the second week of September, the maximum being during the first week of August (Katiyar, 1960). Gupta & Saxena (1963) report that in Uttar Pradesh, India, mating of this species starts in the first week of September.

The lack of data on this species may be due to the misidentification in past years, as suggested by Fletcher (1920). My study shows that it is not a common species in collections, and therefore probably not in the field.

Hieroglyphus africanus Uvarov, 1922

(Text-figs 38–45, Map 2)

Hieroglyphus africanus Uvarov, 1922 : 232. Holotype ♂, SUDAN: Atbara (BMNH) [examined].

Holotype ♂. Medium size, moderately robust. Integument coarsely pitted; densely hairy on ventral surface of abdomen. Antenna 28-segmented. Fastigium of vertex twice as broad as long; carinula of vertex absent; frontal ridge with well-developed sulcus, widened downwards. Dorsum of pronotum crossed by three broad sulci. Angle of posterior margin slightly wider than right angle. Sides of pronotum slightly excurved. Prosternal process conical. Mesosternal interspace slightly open; metasternal interspace closed. Tegmina and wings almost reaching end of abdomen. Hind femur moderately robust. Supra-anal plate with subacute apex. Cercus simple, downcurved, inner side rounded from above, narrowing to subacute apex, which is outcurved. Subgenital plate with obtuse apex.

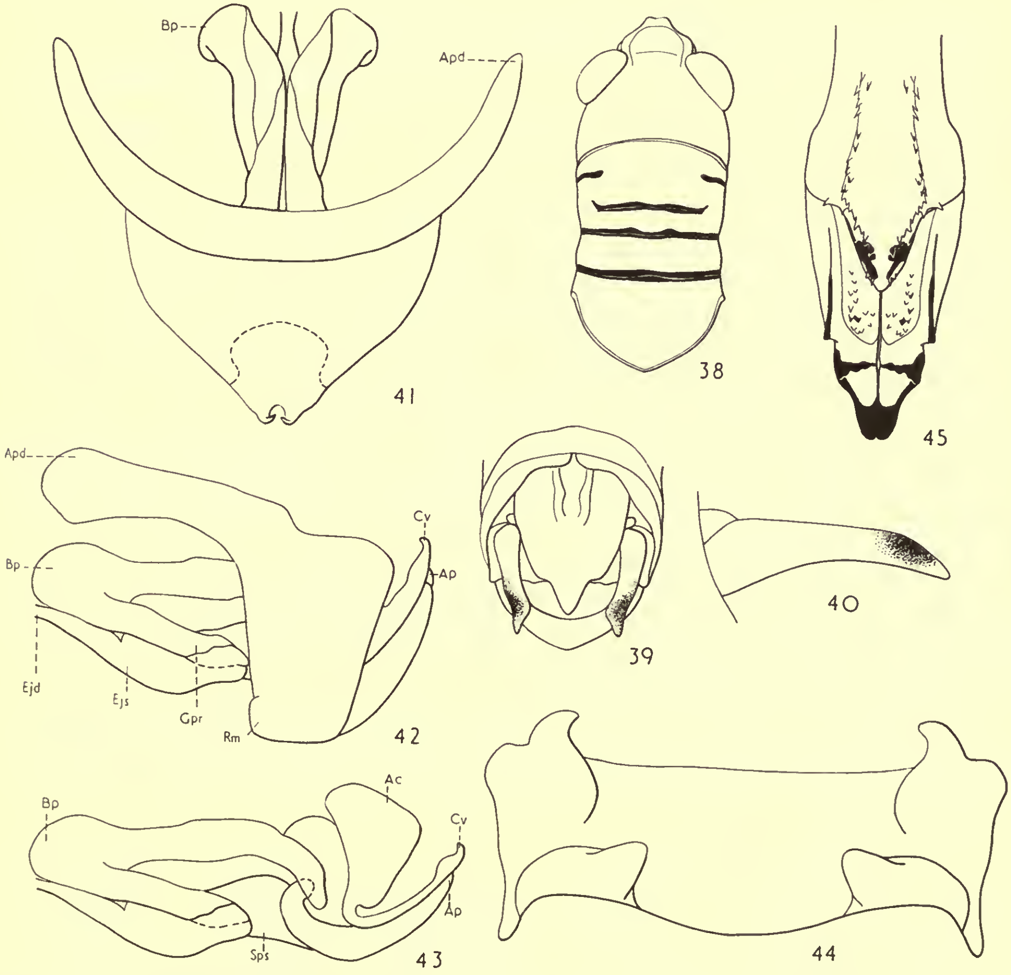
Phallic complex. Apical valves of penis shorter than valves of cingulum, narrowing at apex, valves of cingulum expanding on dorsal side just before apex, apex upcurved and incurved: basal valves of penis slightly expanded at end; dorsal ridge of valves smooth; gonopore process elongate, narrowing to subacute apex; zygoma of cingulum moderately robust; rami broad; apodemes widely arcuate, approximately the same length as basal valves of penis, apex subacute. Epiphallus slightly broader near ancorae, narrowing towards lophi, lophi with inner lobe curving inwards.

General coloration pale greenish buff with light buff patches, antennae black, pronotum with pale buff or yellowish margins, sulci black; wing hyaline, veins dark brown or greenish buff, hind knee with black patch on inner side continuing on tibia, base of tibia and tips of spines black, tibia greenish buff.

♀. As the male, but larger. Differs in the fastigium of vertex being two-and-a-half times broader than long; mesosternal interspace slightly more open than in male; median lobe of subgenital plate with subacute apex, two very spiny ridges diverging apically on ventral surface; lower valve of ovipositor with external lateral projection forming a deep ridge across ventral surface of valves.

Measurements (mm).

	Length of body	Length of pronotum	Length of tegmen	Length of hind femur
Male	38·7–41·0		25·1–29·3	18·8–20·8
Female	51·2	11·5	35·7	22·6



Figs 38–45. *Hieroglyphus africanus* Uvarov. Male, 38, head and pronotum, from above, 39, end of abdomen, from above; 40, cercus, lateral view; 41, phallic complex, from above, with epiphallus and ectophallic membrane removed; 42, same, lateral view; 43, endophallus, lateral view; 44, epiphallus. Female, 45, subgenital plate and lower valves of ovipositor, ventral view.

MATERIAL EXAMINED

NIGERIA: Deba habe, 23.ix.1970 (*G. Popov*), 1 ♂; Bajoga, 28–9.x.1970 (*G. Popov*) 1 ♀; nr Numan, Lamurcle, xi. 1966, 1 ♂; Sherifare, nr Azare, 1924 (*J. N. B. Hanington*), 1 ♂. SENEGAL: Tambacounda, 10–18.ix.1962 (*R. A. Farrow*), 1 ♂. UGANDA: Gulu, Acholi, vii. 1929, 1 ♀.

Hieroglyphus nigrorepletus I. Bolívar, 1912

(Text-figs 46–55, Map 2)

Hieroglyphus nigrorepletus Bolívar, 1912 : 56. LECTOTYPE ♀, INDIA: Bellary, ix. 1911 (*Ramachandra*) (IEE, Madrid), here designated [examined].

Hieroglyphus bettoni Kirby, 1914 : 203. LECTOTYPE ♂, INDIA: Moghal Sarai, 20. ix (*C. S. Betton*) (BMNH), here designated from 2 ♂, 1 ♀ syntypes [examined]. [Synonymized by Uvarov, 1922 : 235.]

Hieroglyphus vastator Carl, 1916 : 481. Holotype ♂, INDIA ('Indes Orient') (MHN, Geneva) [examined]. [Synonymized by Uvarov, 1922 : 235.]

Lectotype ♂. Large and robust. Integument shallow, pitted, shiny. Hairy on three distal abdominal sternites. (Antennae broken.) Fastigium of vertex one-and-a-half times as broad as long; frontal ridge parallel, widening at ocellus. Pronotum with weak median carina; sulci on pronotum deep, posterior margin obtuse-angular, sides expanded in metazona. Prosternal process conical. Mesosternal interspace slightly open; metasternal interspace closed.

Tegmina and wings extending beyond end of abdomen. Hind femur moderately slender. Supra-anal plate angular, with subacute apex. Cercus simple, longer than supra-anal plate, slightly incurved, apex oblique, acute. Subgenital plate subacute.

Phallic complex. Apical valves of penis shorter and broader than valves of cingulum, narrowing at apex; valves of cingulum narrow, upcurved, basal valves of penis robust and broad, dorsal ridge of valves smooth; gonopore process narrowing towards acute apex; zygoma of cingulum narrow; rami broad; apodemes approximately same length as basal valves of penis, broad, narrowing to obtuse apices. Epiphallus very large, with large robust lophi, ancorae small, turned inwards.

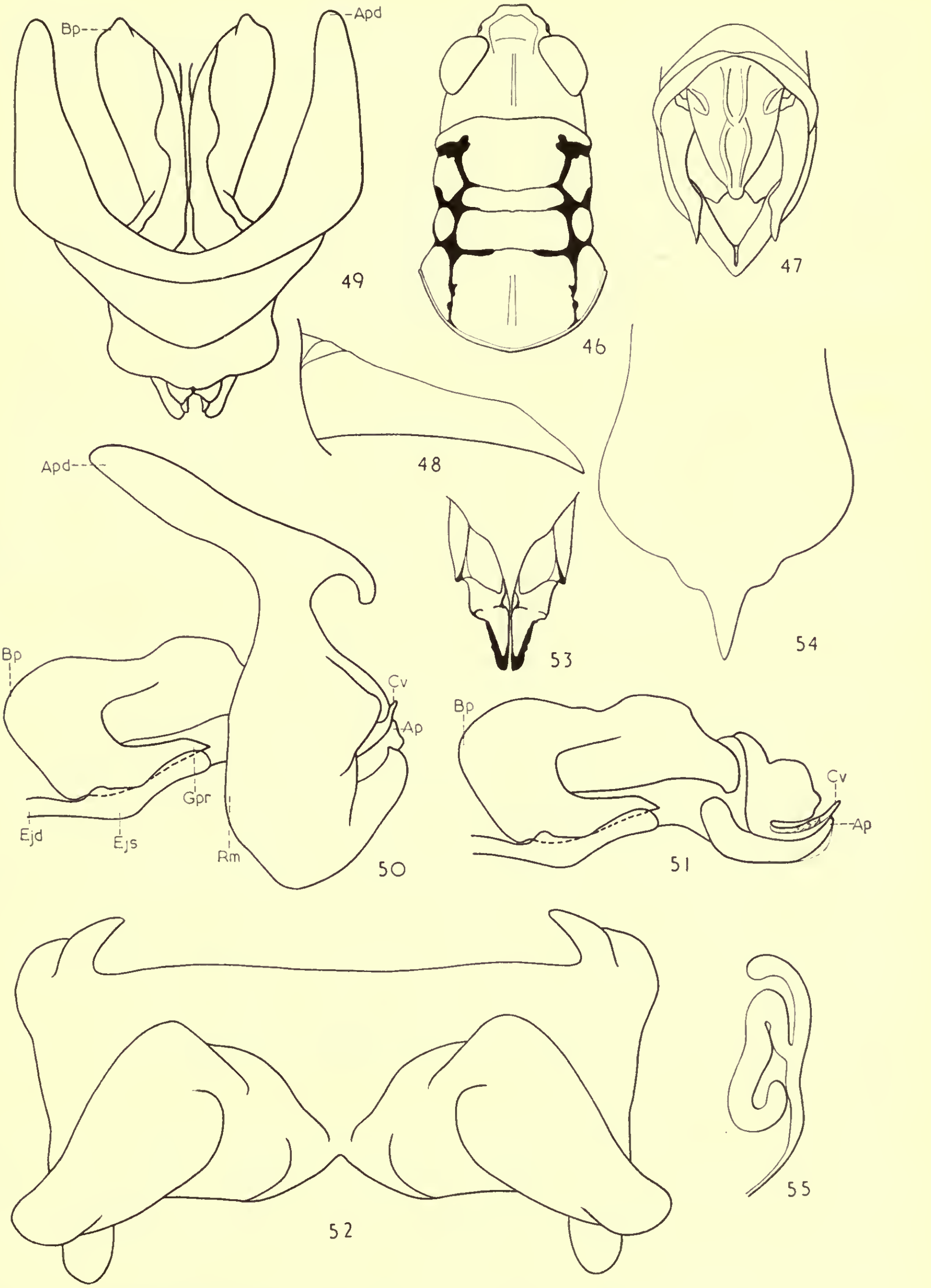
General coloration buff with yellowish buff patches; first, third and fourth sulci of pronotum with broad black bands on sides of pronotum, third sulcus joins first laterally, two broad black parallel bands connect all sulci on dorsum; wing hyaline, veins dark brown or pale buff; hind knee black on inner and outer side, a black patch continues on tibia, spurs of tibia black, tips of spines black, rest of tibia bluish buff.

♀. As the male, but larger. Differs in fastigium of vertex being two-and-a-half times as broad as long; mesosternal interspace more open, subgenital plate with acute median lobe; spermatheca small, apical diverticulum long, narrow, curving back at basal end, preapical diverticulum elongate, half length of apical diverticulum.

Measurements (mm).

	Length of body	Length of pronotum		Length of tegmen	Length of femur
Male	30·3–42·7	7·4–10·4	macropterous:	33·1–35·8	17·7–22·4
			brachypterous:	10·2–19·1	
Female	37·5–48·2	7·5–11·3	macropterous:	38·3	16·9–25·3
			brachypterous:	10·2–16·4	

This species was mentioned in the literature as *H. furcifer* by Cotes (1891) and Maxwell-Lefroy (1906, 1907, 1909), who confused it with *H. banian*, but it has such characteristic markings and shape of the male cerci, that it is difficult to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FIGS 46–55. *Hieroglyphus nigrorepletus* I. Bolívar. Male, 46, head and pronotum, from above; 47, end of abdomen, from above; 48, cercus, lateral view; 49, phallic complex, from above, with epiphallus and ectophallic membrane removed; 50, same, lateral view; 51, endophallus, lateral view; 52, epiphallus. Female, 53, lower valve of ovipositor, ventral view; 54, subgenital plate, ventral view, 55, spermatheca.

understand the confusion. It varies greatly in body-size and tegmina-form; the brachypterous form is more common and frequently more robust. Variation is also found in the general coloration, from greenish buff to buffish brown. The degree of black marking on the pronotum is also variable. The hind tibia varies from bluish green to pale buff.

In the general simple shape and oblique apex of the male cercus, this species is related to *H. africanus*, but differs from it in the robustness of the body, the characteristic breadth and black colouring of the pronotum and the longer male cerci with more acute apices. The phallic complex is also more robust. The female subgenital plate has a small narrow median lobe with an acute apex, unlike *H. africanus*, which has a broad median lobe with a subacute apex.

MATERIAL EXAMINED

INDIA: 1 ♂, 1 ♀; United Provinces, Allahabad, 1 ♂; 13.viii.1909, 1 ♂; 29.vii.1910, 1 ♂, 1 ♀; Bombay, 1 ♂; Jhalod, Punch Mahals, 9.xi.1903, 1 ♂; Borsar, 22.x.1909 (*V. H. Jhakur*) 1 ♂; Bellary Dt. Kotekal, 3.viii.1913, 1 ♂; 2.viii.1912 (*E. Ballard*) 1 ♂; Yemminganur, vii–viii. 1913, 1 ♂; Sarai, 16.ix.1903 (*C. S. Betton*) 1 ♀ (paralectotype of *H. bettoni*); Pachrukhi, Behat, 1927 (*Cornell*), 1 ♀; Surat, 19.viii.1904, 1 ♂; Bikaner, 1 ♂, 1 ♀; Kashmir: Muzaffarabad, 9–12.x.1953, 1 ♂, 1 ♀. PAKISTAN: Karachi, vii–ix (*Maindron*), 1 ♀.

BIONOMICS. The life history was studied in Benares, United Provinces, India (Roonwal, 1945). The hoppers appear in late June to July, soon after the rains. Roonwal states that the duration of the hopper stage is about three weeks. Grist & Lever (1969), however, state that the nymphal development is 71 days at 26°C and 35 days at 32·5°C ± 2·5°C. According to Roonwal (1945) adults begin to appear in late July and mature by the middle of August, when copulation and oviposition occur. According to Chaturvdi (1946) the eggs are laid in the Azangarh district, United Provinces, from mid-September to mid-November, at a soil depth of 2–5 in. Pradhan & Peswani (1961) state that mating lasts 4–24 hours; they also record that the process of egg-laying took 2½ hours. According to Roonwal (1945) the egg-pod contains 20–30 eggs. Pradhan & Peswani (1961) state that 23–53 (average 39) eggs are found per pod. Roonwal (1945) states that the adults die off towards the end of August or the beginning of September.

Wesley (1946), Rao & Cherian (1940), and Main (1912) state that the life history is similar to that of *H. banian*.

ECOLOGY. The Phadka Grasshopper (native name) is found in India and Pakistan. It feeds on rice, but is also reported by Bhatia, Singh & Ahaluwalia (1965) in arid-zone regions. Pradhan & Peswani (1961) state that the young nymphs remain in the bunds and mounds for about a fortnight and feed on weeds. They also state that nymphs and adults swim in water. It has been found feeding on the following plants:

Andropogon halepensis (native name: baru) (Bhatia, Singh & Ahluwalia, 1965)
A. sorghum (cholam, and jowar millets) (Roonwal, 1945)

Brachiaria sp. (Pradhan & Peswani, 1961)
Cannabis sativa (hemp) (Roonwal, 1945)
Capparis aphylla (kair) (Bhatia, Singh & Ahluwalia, 1965)
Dactyloctenium aegyptium (Pradhan & Peswani, 1961)
Eleusine coracana (Sengupta & Behura, 1951)
Oryza sativa (Roonwal, 1945)
Pennisetum cenchroides (dhaman) (Bhatia, Singh & Ahluwalia, 1965)
P. typhoideum (bajra) (Roonwal, 1945)
Phaseolus aconitifolius (Bhatia, Singh & Ahluwalia, 1965)
P. mungo (Bhatia, Singh & Ahluwalia, 1965)
Saccharum officinarum (sugar cane) (Roonwal, 1945)
S. spontaneum (kard) (Bhatia, Singh & Ahluwalia, 1965)
Salvador persica (jal) (Bhatia, Singh & Ahluwalia, 1965)
Setaria italica (tenai or Indian millet) (Roonwal, 1945)
Veronia sp. (Pradhan & Peswani, 1961)
Zea mays (Roonwal, 1945)
Bhatia (1951) states that it also infests sesame and cotton.

ECONOMIC IMPORTANCE. This species is an important pest of rice, sugar-cane, hemp, maize and sorghum in the Indo-Pakistan subcontinent (Ghouri & Ahmed, 1960). Bhatia (1951) records that 207,218 acres of cultivated land were infested by it, comprising 50% jowar, 25% bajra, 20% sesamum and 5% cotton. It was also present in 197,000 acres of uncultivated land and 11,919 acres of forest. It is a most serious pest in Ajmer-Merwara, India (Bhatia, 1950). In 1948, 75% of village cultivations were infested by it and the estimated area was 112,707 acres. It has been reported from Ajmer-Merwara and adjoining areas of Udaipur, Jodhpur and Kishergarh as a serious pest of maize and jowar (Anon., 1951*a*). Chaturvdi (1946) states that it is a serious though sporadic pest of sugar-cane, maize and juar (*Andropogon sorghum*) in the eastern parts of the United Provinces, India. Pradhan & Peswani (1961) also consider it a serious pest in India, but do not give further details. Main (1912) states that it is recorded from Sind, Las Bela and Mekran. It is a fairly serious pest on jowar in certain other localities. Grist & Lever (1969) regard it as of less economic importance that *H. banian*, but they state that it feeds on *Andropogon sorghum* (juar), *Setaria*, millet, rice and sugar cane. It is recorded as a serious pest of maize (*Zea mays*), jowar (*Sorghum vulgare*) and bajra (*Pennisetum typhoideum*) in the states of Madras, Bombay, Madhya Pradesh, Bihar, Uttar Pradesh, Rajasthan, Andhra Pradesh, Orissa and Delhi (Bhatia, Charan Singh & Ahluwalia, 1965). Roonwal (1945) records it as a minor pest of millets *Andropogon sorghum, Pennisetum typhoideum* and *Setaria italica* and also of *Oryza sativa* (rice), *Zea mays* (maize), *Cannabis sativa* (hemp) and *Saccharum officinarum* (sugar-cane).

Sengupta & Behura (1960) report notable outbreaks of this species in 1945 in Orissa. The average damage to crops was 25%. The distribution given includes the states mentioned above, with the addition of Assam, Mysore, Punjab and West Bengal. It is recorded as a major pest in Rajasthan, active from July to

October. In severely infested fields the crop is totally destroyed. The leaves are nibbled in the nurseries and the insects finally reach the transplanted fields (Khan, Vyas & Vaish, 1963). Severe epidemics completely defoliate sugar-cane in Uttar Pradesh and Orissa (Gupta & Saxena, 1963).

Welsey (1946), Rao (1956) and Fletcher (1920) considered it as of not much economic importance in certain upland areas of Madras, Punjab and Andhra Pradesh.

SWARMING BEHAVIOUR. The macropterous form is reported only occasionally, the majority of specimens found being brachypterous. However, Ghouri & Ahmed (1960) reported that a medium-size swarm passed over Malir (Pakistan) and 500 specimens collected were fully macropterous. Other smaller swarms were reported in Bela, Karachi, Malir, Thatta and parts of Hyderabad. The age and movement of the swarms indicated that they originated near Karachi. It was thought that arid conditions between 66° and 71° E longitude and 24° and 27°N latitude were favourable for transformation from non-swarming to swarming populations. The same authors also stated that reclamation of desert in Pakistan was continously extending the areas favourable for breeding by this species.

PREDATORS AND PARASITES

Fungi:

Empusa [*Entomophthora*] *grylli* Fres. After heavy rains in 1929 and 1930 hoppers were found infested (Wesley, 1946).

Nematodes:

Cordius sp. (probably) (Wesley, 1946)
Mermis nigrescens Duj. (Wesley, 1946).

Mites:

Eutrombidium trigonum Hermann (Peswani, 1961)
Trombidium sp. Larva of a small reddish mite reported on bodies of adults (Peswani, 1961).

Frogs:

Rana sp. (attacking nymphs) (Wesley, 1946).

Snakes:

Tropidonotus piacetus (feeding on nymphs) (Wesley, 1946).

Birds (Wesley, 1946):

Acridotheres tristis L. (Mynah)
Coracias indica L. (Indian Roller)
Corvus splendens Vieill (Common Crow)
C. macrorhynchus Waglar (Jungle Crow)
Dicrurus macrocercus Vieill (King Crow)
Baliastur indus Bodd (Brahmani Kite)
Mileus govinda Sykes
Ducks are used by local cultivators to check hoppers.

Mammals (Wesley, 1946):

Microchiroptera sp. (devouring adults at light at night)

Excreta of jackals (probably) contained *Hieroglyphus*.

Hieroglyphus daganensis Krauss, 1877

(Text-figs 56–67, Map 1)

Hieroglyphus daganensis Krauss, 1877 : 42. LECTOTYPE ♂, SENEGAL: Dagana, x–xii.1868 (*F. Steindachner*) (NM, Vienna), here designated [examined].

Hieroglyphus daganensis var. *abbreviata* Krauss, 1877 : 43. LECTOTYPE ♀, SENEGAL: Dagana, x–xii.1868 (*F. Steindachner*) (NM, Vienna), here designated. **Syn. n.**

♂. Very large. Moderately robust. Integument coarsely pitted. Hairy on ventral surface. Antenna 28-segmented. Fastigium of vertex slightly more than one-and-a-half times as broad as its length; carinula of vertex weak; frontal ridge divergent downwards with deep sulcus. Sulci on pronotum moderately deep, the posterior sulcus bow-shaped at centre, posterior margin of metazona rounded, sides relatively straight. Prosternal process conical. Mesosternal interspace closed; metasternal interspace closed.

Tegmina and wings extending slightly beyond end of abdomen. Hind femur moderately slender. Supra-anal plate with broad attenuate apex which is subacute. Cercus simple, same length as supra-anal plate, upcurved and recurved at subacute apex. Subgenital plate with sulcate and emarginate apex.

Phallic complex. Apical valves of penis slightly shorter than valves of cingulum, apex rounded; valves of cingulum moderately broad, apex rounded; basal valves of penis robust, slightly expanded at ends, dorsal ridge of valve smooth; gonopore process broad, narrowing to subacute apex; zygoma of cingulum moderately broad; rami broad; apodemes widely arcuate; shorter than basal valves of penis, narrowing to rounded apex. Epiphallus large, with broad bridge, lobes of lophi rounded; ancorae small.

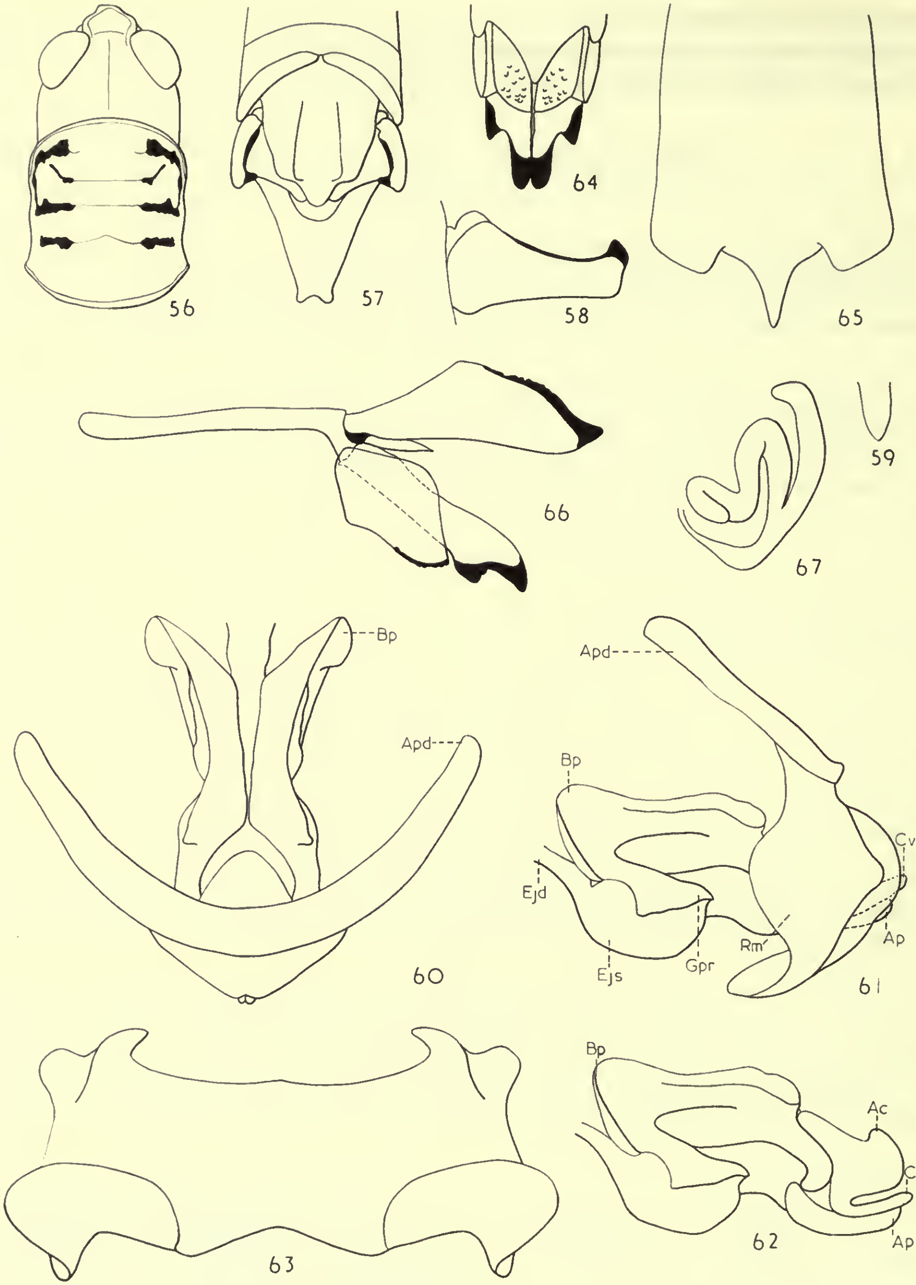
General coloration pale green or buff with yellowish buff patches, sulci on pronotum with broad black bands on sides of pronotum, second sulcus with black bands laterally, pointing anteriorly, third sulcus joins first laterally, dorsum of pronotum pale green; sides of thorax with black bands between segments; wings hyaline, veins pale green, buff or brown; hind femur green, or buff with reddish tinge near knee, hind knee with black patch on inner and outer side, continuing on base of tibia, tibia bluish green; tips of spines black, spurs black, apex of cercus black.

♀. As the male, but larger. Differs in fastigium of vertex two-and-a-half times broader than its length; mesosternal interspace slightly open, subgenital plate trilobate with outer lobes angular and much shorter than median lobe, median lobe subacute; valves of ovipositor short and robust; external lateral projection of lower valve large, obtuse-angular, spermatheca small, apical diverticulum long, narrow, curving back at basal end, preapical diverticulum elongate, half length of apical diverticulum.

Measurements (mm).

	Length of body	Length of pronotum		Length of tegmen	Length of femur
Male	33·9–43·5	6·9–8·1	macropterous:	24·8–33·5	16·1–20·5
			brachypterous:	14·1–17·5	
Female	50·9–57·6	10·3–12·3	macropterous:	38·2–41·4	25·0–26·6
			brachypterous:	16·9–21·6	

This species varies greatly in body-size and coloration. The reddish colour on the hind femur is not always present and may be associated with sexual maturation.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FIGS 56–67. *Hieroglyphus daganensis* Krauss. Male, 56, head and pronotum, from above; 57, end of abdomen, from above; 58, cercus, lateral view; 59, prosternal tubercle, lateral view; 60, phallic complex, from above, with epiphallus and ectophallic membrane removed; 61, same, lateral view; 62, endophallus, lateral view; 63, epiphallus. Female, 64, lower valves of ovipositor, ventral view; 65, subgenital plate, ventral view; 66, ovipositor, lateral view. 67, spermatheca.

The same coloration is also found in *H. perpolita*. The degree of black markings on the pronotum is also variable, but the dorsum of the pronotum is without black bands on the sulci as in *H. nigrorepletus*. The general coloration varies from buff to yellowish green.

H. daganensis varies in tegmina length, having both macropterous and brachypterous forms. The brachypterous forms were described by Krauss (1877) as *H. daganensis* var. *abbreviata*; they are very common.

This species is very closely related to the Indian species *H. oryzivorus*. These two species are separated from the rest by the shape of the posterior margin of the pronotum, and the shape of the male cercus. However, these are not sufficiently important characters to warrant placing these species in separate genera. Investigation of the phallic complex also confirms that they all belong to the same genus.

MATERIAL EXAMINED

MALI: Macina, Kara, 12.ix.1959 (*G. Popov*), 2 ♀; Nr. Menaka, 25.ix.1959 (*G. Popov*) 1♂, 3♀; Between Menaka and Mantas, the Valley of Azovak, 27.ix.1959 (*G. Popov*), 1 ♂; Nr. Douenza, 8.x.1959 (*G. Popov*), 1 ♀; Sangha Village, viii. 1962 (*N. D. Jago*), 1 ♂; Hombori, 29.viii.1962 (*N. D. Jago*), 2 ♂, 1 ♀. SENEGAL: Bambey, 1946 (*J. Risbec*), 2 ♂; Thies, 22.ix.1962 (*R. A. Farrow*), 1 ♂; Tambacounda, 10–18.ix.1962 (*R. A. Farrow*), 1 ♀; Kaolack, 11–19.ix.1962 (*R. A. Farrow*), 7 ♂, 3 ♀; Dakar, 1949–1950, 1 ♀; Mbao, 21–26.viii.1962 (*R. A. Farrow*), 1 ♂. ETHIOPIA: Nr. Barentu, 5.x.1957 (*D. J. Greathead*), 1 ♂. SAHARA: Agades, Triwalam, 28.ix.1965 (*G. Popov*), 1 ♀. CHAD: Kara, 1. 1957 (*J. T. Davey*), 2 ♂; Ouadai, Abecher, 1 ♂. KENYA: N. du Lac Rodolphe, Riv Bass entre les Mts Nakoua et Galebi, vi. 1903 (Mission du Bourg de Bozas), 1 ♀. IVORY COAST: Odienne, 4.xi.1966 (*B. Guessan*), 1 ♂. SUDAN: Gedaref, x. 1946 (*R. J. V. Joyce*), 1 ♂; Wad Medani, 27.viii.1930 (*W. P. L. Cameron*), 1 ♂; Kodok, 27.viii.1929 (*M. M. Smail*), 2 ♂, 1 ♀; Um Dona, Koalib, 22.x.1927 (*W. Rutledge*), 1 ♀; Singa, 12.x.1927 (*H. B. Johnston*) 3 ♂, 2 ♀. NIGERIA: Kalkala, 17.x.1933 (*A. M. Gwynn*) 1 ♂, 2 ♀; 10.ix.1934, 1 ♂; 20.ix.1933, 1 ♀; Mongonu, 28.ix.1931 (*F. D. Golding*), 2 ♂, 1 ♀; Numan, Adamawa, 2.xii.1966, 1 ♀; Numan 21.ix.1948 (*A. Jorgensen*), 1 ♂; Argungu, 21.x.1910 (*C. E. S. Watson*), 1 ♂, 5 ♀; Shangjure, Azare, 1924 (*J. W. B. Hanington*), 1 ♂; Birnin Kebbi (*C. E. S. Watson*), 1 ♂; Dongo, 14.xi.1931 (*F. D. Golding*), 1 ♂; Bajoga, 28.ix.70 (*G. Popov*), 1 ♂, 1 ♀; Gumari, 2 km W. of Gajbo, 15.xii.1949 (*H. B. Johnston*), 1 ♂. NIGER: Nr Tahoua, 2.ix.1960 (*G. Popov*), 2 ♂, 1 ♀; Ansongo, 1.v.1928 (*H. Madsen*), 1 ♀.

BIONOMICS. In Nigeria this species survives the dry season in the egg stage (Popov, 1959). According to Golding (1948) the adults appear at Kalkala, Nigeria, between August and November, being most numerous in October. There is an embryonic diapause from November to about July.

ECOLOGY. This species appears in marshes in Nigeria north of 12°N. It feeds on grasses notably *Brachiaria*, *Echinochloa*, *Andropogon* sp., *Sorgum aethiopicum* and bulrush millet (Golding, 1948). Joyce (1952) reports that it mostly favours unburnt virgin land in East Central Sudan and is most abundant in areas with good graminaceous vegetation and light rainfall during the hatching period. Popov

(1959) records that it is common in woodlands away from cultivations, in the Sudan-Chad area.

Economic importance. As many individuals are brachypterous and therefore not flyers they seldom move into crops (Joyce, 1952). However, Popov, (1959) states that in the eastern Chad and Dafur area they cause considerable damage to millet cultivation (*Pennisetum typhoideum*). The species was widespread in the Sahelian belt extending south to the Sudanian belt. Mallamaire (1956) reported that it damaged young seedlings of *Arachis hypogea* in French West Africa.

Hieroglyphus oryzivorus Carl, 1916

(Text-figs 68–77, Map 1)

Hieroglyphus oryzivorus Carl, 1916 : 480. LECTOTYPE ♀, India: Murshidabad (MHN, Geneva), here designated [examined].

♂. Medium size. Moderately slender. Integument finely and shallowly pitted. Hairy on ventral surface. (Antennae broken.) Fastigium of vertex twice as broad as long; carinula of vertex absent; frontal ridge divergent downwards with moderately shallow sulcus. Sulci on pronotum moderately deep, the posterior suclus bow-shaped at centre, posterior margin of metazona rounded. Prosternal process conical. Mesosternal interspace closed; metasternal interspace closed. Apices of folded tegmina and wings approximately level with tip of abdomen. Hind femur moderately slender. Supra-anal plate with relatively broad apex, which is subacute. Cercus simple, same length as supra-anal plate, upcurved and incurved with apex subacute. Subgenital plate with sulcate and truncate apex.

Phallic complex. Apical valves of penis stouter and shorter than valves of cingulum, apex subacute. Valves of cingulum narrow, elongate with rounded apices; basal valves of penis robust, expanded at ends, dorsal ridge of valves smooth; gonopore process elongate, narrowing to subacute apex; rami broad; apodemes U-shaped, slightly shorter than basal valves of penis, and slightly expanded before rounded apex. Epiphallus of medium size, lobes of lophi rounded with second lobe facing inwards, ancorae small.

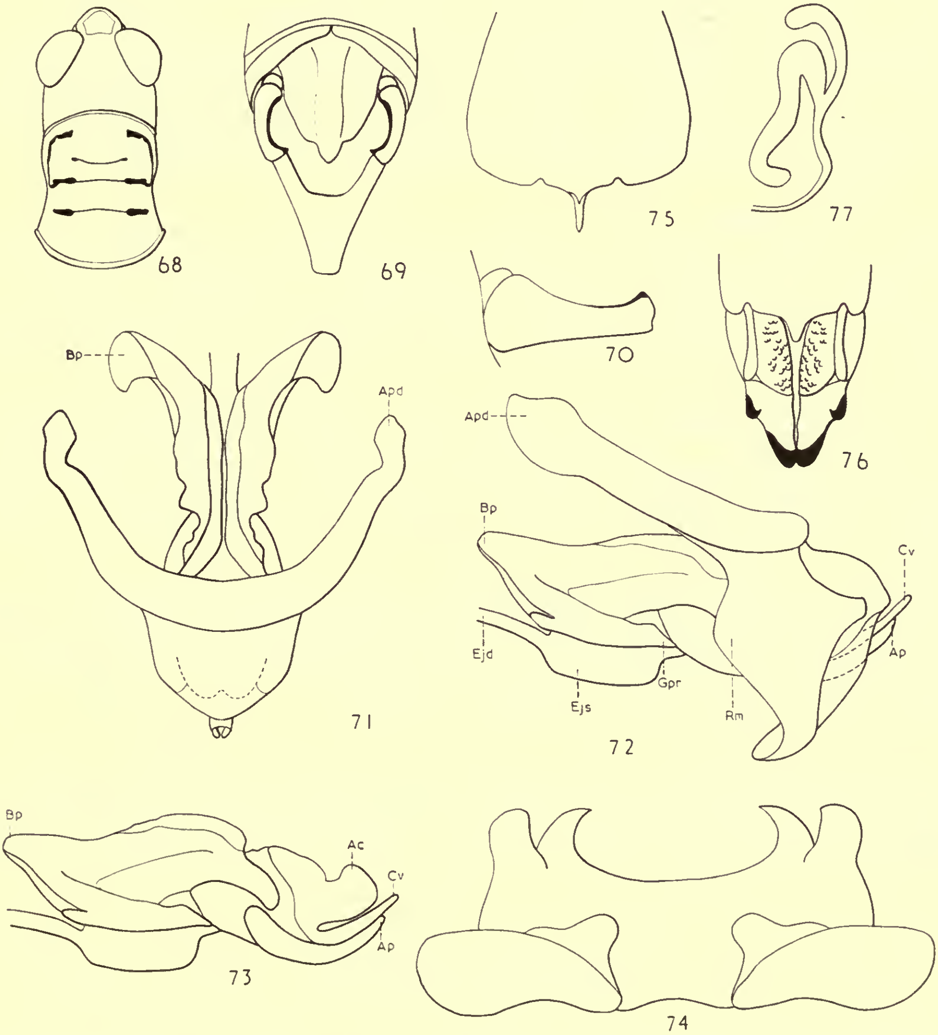
General coloration pale green or buff with yellowish brown patches, sulci on pronotum with broad black bands laterally, second sulcus with only small black patches each end, third sulcus joins first laterally, dorsum of pronotum pale green with narrow, pale brown sulci, sides of thorax with black bands between segments; wing hyaline, veins pale green, buff or brown. Hind femur buff with reddish tinge, hind knee without black patches, tibia pale bluish green, tips of spines and spurs black; tip of cercus black.

♀. As the male, but larger, differs in fastigium of vertex being nearly three times as broad as long; mesosternal interspace open; subgenital plate trilobate with outer lobes rounded and small, much shorter than median lobe, median lobe pointed. Valves of ovipositor very short and robust; external lateral projection of lower valve small, obtuse; spermatheca small, apical diverticulum long, narrow, curving back at basal end, preapical diverticulum elongate, half length of apical diverticulum.

Measurements (mm).

	Length of body	Length of pronotum		Length of tegmen	Length of femur
Male	35·0–35·4	5·4–7·1	macropterous:	20·5–23·7	15·7–18·9
Female	42·7–63·3	7·6–10·2	macropterous: brachypterous:	33·5 17·6–28·4	19·6–28·3

This species is very closely related to *H. daganensis*, and is very similar in appearance and difficult to differentiate. It has been retained as a species distinct from *H. daganensis* because of the following characters. The body is smaller. The apex of the male cercus is not elongate, and the apex of the subgenital plate is truncate, not emarginate as in *H. daganensis* (though this character is not always constant in *H. daganensis*). The female subgenital plate is of different shape; in



FIGS 68–77. *Hieroglyphus oryzivorus* Carl. Male, 68, head and pronotum, from above; 69, end of abdomen, from above; 70, cercus, lateral view; 71, phallic complex, from above, with epiphallus and ectophallic membrane removed; 72, same, lateral view; 73, endophallus, lateral view; 74, epiphallus. Female, 75, subgenital plate, ventral view; 76, lower valves of ovipositor, ventral view; 77, spermatheca.

H. oryzivorus the lateral lobes are very small and rounded; the median lobe is also small. The phallic complex also gives good characters. The valves of the cingulum are elongate and narrow, while in *H. daganensis* they are shorter and thicker. The epiphallus possesses an extra lobe on the lophi, which faces inwards; this is absent in *H. daganensis*. *H. oryzivorus* is from India, *H. daganensis* from Africa.

Like *H. daganensis*, this species has both macropterous and brachyterous forms. In the specimens studied by the author the males are macropterous and the females, with only one exception, brachypterous.

This species was described by Carl from two females; a lectotype has been designated. Carl attributed his specimens to the species mentioned by Maxwell-Lefroy (1906) as *H. furcifer*. However, in Maxwell-Lefroy (1906), fig. 8 of plate X shows the male cercus of *H. nigrorepletus* and fig. 4 of plate VIII is like *H. banian* in the shape of the pronotum and not *H. oryzivorus* as Carl suggests.

MATERIAL EXAMINED

INDIA: Mungeli, Bilaspur, 25.x.1906, 1 ♂; nr Bikaner, Udramsar, 20.viii.1963 (*G. Popov*), 1 ♀; Rampur, 13.x.1903, 1 ♀; Bombay, 1 ♀; Khurda, 11.xi.1913, 5 ♀; Godavari (Dt. Samalkot), 11.xi.1921 (*Y. R. Rao*), 2 ♂; 16–18.xi.1921, 1 ♂, 2 ♀. PAKISTAN: Amgare, Sind, vii. 1932, 1 ♂; Mekran, Pidark, xii. 1933 (*F. M. Turbat*), 1 ♂.

Rao & Cherian (1940) record it from INDIA: Ganjam, Vizagapatam, Godavari and possibly Bellary. Uvarov (1922) records it from INDIA: Bombay Province, Pardi, 23.ix.1904; Khurda, 11.xi.1913; Kasal-Mardvi, 25.x.1903; Jhalod, Panch Mahals, 9.xi.1903; Central Provinces, Raipur, 13.x.1903; Mungeli, Belaspur 25.x.1906, and S. India.

BIONOMICS. There is very little published information about this species. The eggs are laid from the middle of September to the middle of November at a depth of 2–5 inches in the soil (Janjua, 1957) and develop the following June–July. The nymphs hatch in July and pass through six instars before becoming adult. There is only one generation a year. They feed on grasses.

ECONOMIC IMPORTANCE. The food-plants of economic importance are rice, jowar and sugar-cane, but *H. oryzivorus* is primarily a serious pest of rice. The damage is identical to that of *H. banian*. Together with *H. banian* it has been recorded as a serious pest of rice in two areas in Madras (Anon., 1933).

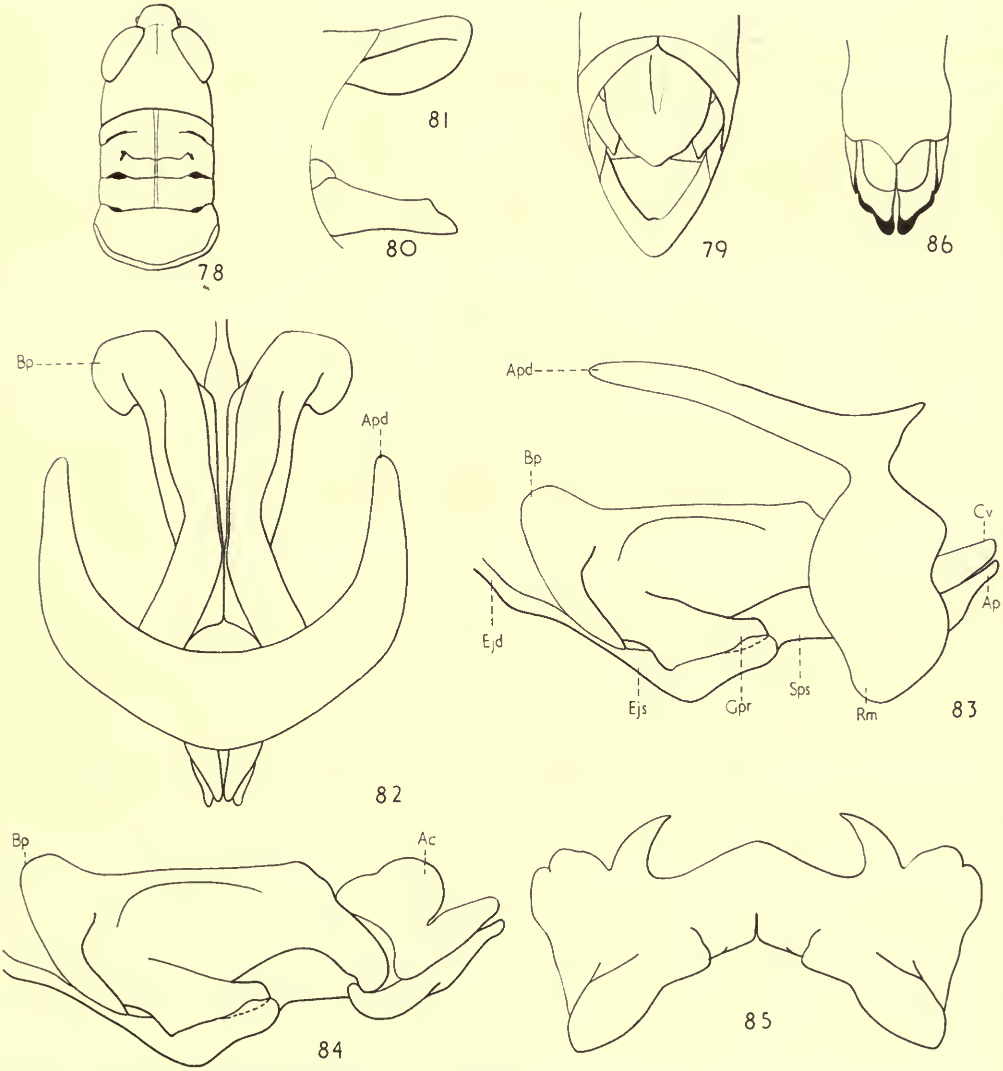
***Hieroglyphus indicus* sp. n.**

(Text-figs 78–86, Map 1)

Holotype ♂. Comparatively small, moderately slender. Integument finely pitted, hairy on ventral side. Antenna 27-segmented. Fastigium of vertex twice as broad as long; carinula of vertex weak; frontal ridge widened downwards, with shallow sulcus. Pronotum with median carina almost entire; sulci on pronotum moderately deep, posterior sulcus slightly bow-shaped towards the centre, posterior margin obtuse-angular, sides relatively straight. Prosternal process conical. Mesosternal interspace open; metasternal interspace closed.

Tegmina and wings micropterous, reaching second abdominal segment. Hind femur moderately slender. Supra-anal plate plain with obtuse-angular apex. Cercus nearly as long as supra-anal plate, moderately robust, shallowly bilobate, apex oblique with the lower part elongate and the apex subacute. Subgenital plate with subacute apex.

Phallic complex. Apical valves of penis same length as valves of cingulum, rounded at apices; valves of cingulum broad at truncate apex; basal valves of penis robust, expanded at end, dorsal ridge of valves smooth; gonopore process broad, narrowing to oblique apex; zygoma



FIGS 78–86. *Hieroglyphus indicus* sp. n. Male paratype, 78, head and pronotum, from above; 79, end of abdomen, from above; 80, cercus, lateral view; 81, tegmen; 82, phallic complex, from above, with epiphallus and ectophallic membrane removed; 83, same, lateral view; 84, endophallus, lateral view; 85, epiphallus. Female paratype, 86, subgenital plate and lower valves of ovipositor, ventral view.

of cingulum broad, rami moderately broad; apodemes U-shaped, shorter than basal valves of penis, narrowing to rounded apex. Epiphallus large, with tendency to divide at base; lophi with two pairs of lobes, one pair pointing inwards and one outwards; ancorae moderately long.

General coloration pale green and buff, sulci on pronotum broadly black on lateral lobes, green on dorsum; sides of thorax greenish buff; tegmina yellowish green, wings hyaline; hind femur pale reddish brown with black patches on both sides of knee; tibia greyish green with black underside, tips of spines and spurs black.

♀ (paratype). As the male, but larger. Differs in that fastigium of vertex is three times as broad as long; mesosternal interspace more widely open, subgenital plate forming acute apex; valves of ovipositor short and robust, external lateral projection of lower valve rounded.

Measurements (mm).

	Length of body	Length of pronotum	Length of tegmen	Length of femur
Male	26·7–27·2	6·0–6·5	4·9–5·1	14·0–14·9
Female	41·6	9·4	7·6	20·7

This species has a similar type of pronotum to that of *H. daganensis* and *H. oryzivorus* but differs from them in the shape of the male cercus, which is not upcurved at the apex but bilobate and oblique. It is therefore a link between them and the rest of the species of the group. The female subgenital plate and ovipositor valves are similar to those of *H. tonkinensis*. *H. indicus* differs from the other species studied in that the apical valves of penis are of the same length as the cingulum valves; in the other species the apical valves are shorter.

MATERIAL EXAMINED

Holotype ♂, INDIA: Bombay, Khandala, 12.x.1928 (IEE, Madrid).

Paratypes. 1 ♂, 1 ♀, same data and depository as holotype.

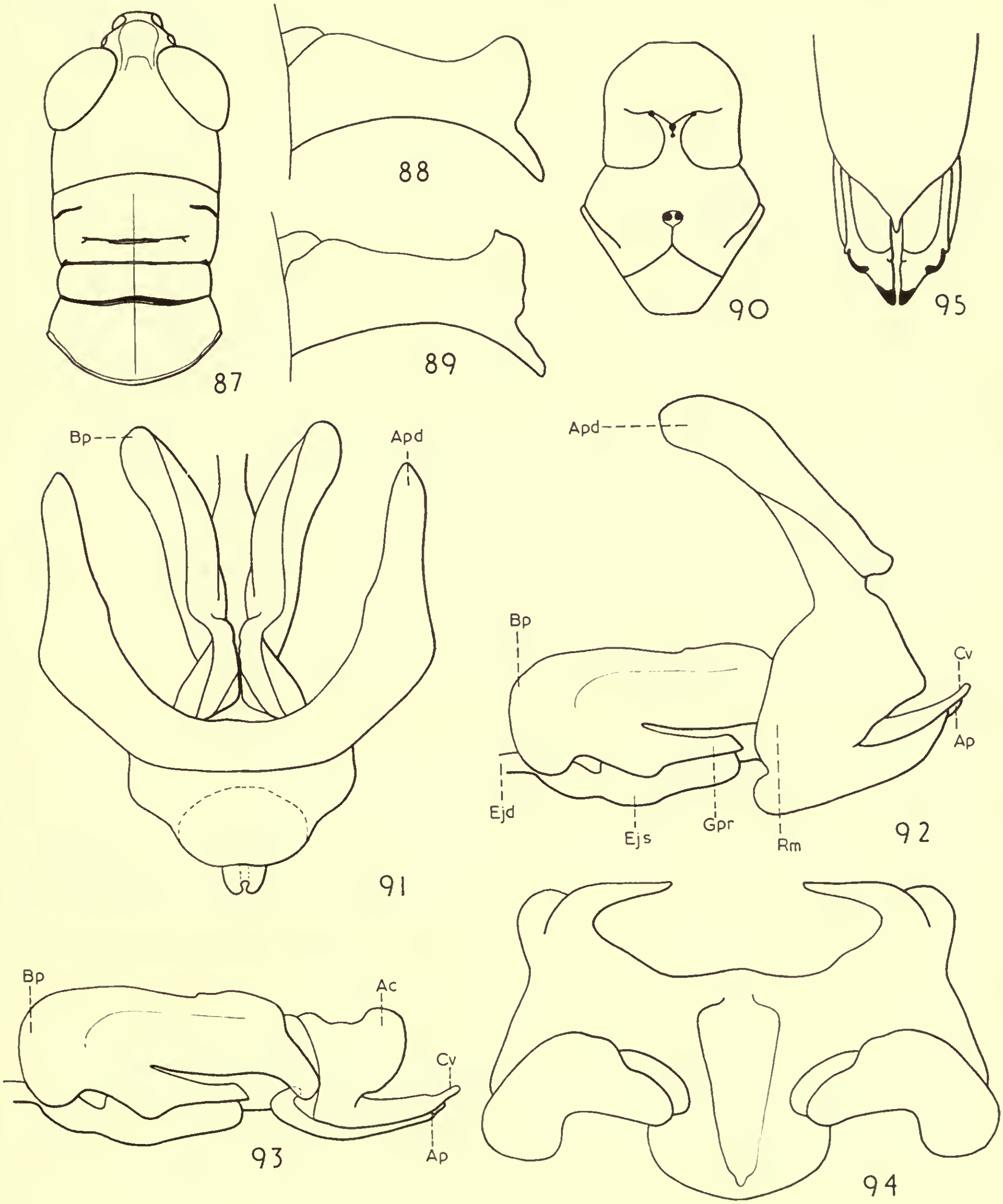
Hieroglyphus tonkinensis I. Bolívar, 1912

(Text-figs 87–95, Map 3)

Hieroglyphus tonkinensis I. Bolívar, 1912 : 54. Holotype ♂, VIETNAM (NORTH): Hanoi (IEE, Madrid) [examined].

♂. Medium size. Comparatively slender. Integument finely pitted. Fastigium of vertex broader than long; occipital carinula absent; frontal ridge with shallow sulcus, lateral carinulae well defined, straight, widening between antennae and converging above. Median carina of pronotum weak, disappearing in pronzona, crossed by second, third and posterior sulci; the first sulcus present only laterally, the second only centrally, the third and posterior sulci entire. All sulci slightly wavy, metazona about half length of prozona, posterior margin of metazona obtuse-angular, almost rounded. Prosternal process conical. Mesosternal interspace open, about twice as long as its width in middle; metasternal interspace closed. Tegmina and wings reaching to, or just beyond end of abdomen. Hind femur slightly shorter than abdomen. Hind tibia slightly shorter than hind femur. Supra-anal plate longer than wide with two ridge-like elevations, median sulcus disappearing at centre but continuing at basal part. Cercus broad, at apex bilobate, upper lobe broad with rounded or slightly sinuate outer edge; lower lobe elongate, narrow and pointed. Subgenital plate narrowing to subacute apex.

Phallic complex. Apical valves of penis shorter than valves of cingulum, narrowing at apices; valves of cingulum tapering at apices; basal valves of penis moderately robust with


87
88
89
90
95
Bp
Apd
91
Apd
Bp
Cv
Ap
Ejd
Ejs
Gpr
Rm
92
Bp
Ac
Cv
Ap
93
94

Figs 87–95. *Hieroglyphus tonkinensis* I. Bolívar. Male, 87, head and pronotum, from above; 88, cercus, lateral view; 89, variation of cercus, lateral view; 90, meso- and metasternum; 91, phallic complex, from above, with epiphallus and ectophallic membrane removed; 92, same, lateral view; 93, endophallus, lateral view; 94, epiphallus. Female, 95, subgenital plate, and lower valves of ovipositor, ventral view.

sides extending, dorsal ridge of valves smooth but curved; gonopore process large, elongate, narrowing at apex; zygoma of cingulum wide and moderately broad, rami broad; apodemes almost reaching ends of basal valves of penis, horse-shoe shaped, narrow towards obtuse apex. Epiphallus bridge-shaped with large central protrusion at base; ancorae elongate with acute apices; lophi large with two inner lobes, and sinuate outer edges.

General coloration green or yellowish green with yellowish brown patches; all sulci on pronotum black; wing hyaline, veins dark and pale brown; hind knee with black patches on both sides; tibia blue, at base black, apical part and tips of spines black.

♀. As male, but larger. Differs in fastigium of vertex being twice as broad as long; subgenital plate with one pointed median lobe; lower valves of ovipositor short, outer lateral projection of lower valve rounded or ill-defined.

Measurements (mm).

	Length of body	Length of pronotum	Length of tegmen	Length of hind femur
Male	32·4–38·1	6·6–6·8	25·7–26·1	17·5–18·7
Female	42·7	8·7	32·4	23·1

This species is related to *H. banian* but differs from it in the broad male cerci, with the upper lobe wide with sinuate or rounded edge, and the lower lobe long and pointed. The ovipositor valves are short, the lower valve with a poorly defined outer lateral projection. The mesosternal interspace is open. The phallic complex is similar to *H. banian* but differs mainly in the epiphallus possessing a thick bridge with a large central protrusion; the ancorae are longer and more acute.

H. tonkinensis I. Bolívar, 1912 must not be confused with *H. tonkinensis* Carl, 1916, which is a junior synonym of *H. annulicornis* (Shiraki, 1910).

MATERIAL EXAMINED

VIETNAM (NORTH): Thanh Hoa, 10.xii.1901 (*H. Fruhstorfer*), 2 ♂; vi–vii (*H. Fruhstorfer*), 1 ♂, 1 ♀; Hanoi, 1910 (*Monceau*), 1 ♂; region de Hoa Binh 1930 (*A. de Cooman*), 1 ♂. HAINAN I.: S.W. Nodoa, 28.vi.1929, 2 ♂, 8.vii.1929, 1 ♀, 2.vi.1929, 1 ♂. THAILAND: Bangkok, 1908 (*Collin de Plancy*), 1 ♂; Chumphon, 10°30′N, 99°11′E, 15.vi.1958 (*M.C. Lak Kashimsonta*), 2 ♂; Sakonnakhon, 3.viii.1956 (*Ch. Butalobol*), 1 ♂; Sukhothai, 10.vii.1961 (*P. Kaen Tasee*), 1 ♂. CHINA: Kwangtseh-Fukien, 22.ix.1937 (*J. Klapperich*), 1 ♀.

ECONOMIC IMPORTANCE. Tinkham (1936) records that this species is an injurious pest of rice and sugar-cane from Hupeh to Cochin China (South Vietnam). Mishchenko (1952) states that it causes damage to rice, sugar-cane and bamboo.

Very little is known about this species, possibly because it is confused with *H. banian*, a very closely related species.

Hieroglyphus banian (Fabricius, 1798)

(Text-figs 1, 96–106, Map 4)

Gryllus banian Fabricius, 1798 : 194. LECTOTYPE ♂, INDIA (UZM, Copenhagen), here designated from 1 ♂, 2 ♀ syntypes [examined].

Acridium furcifer Serville, 1839 : 677. 3 ♂ syntypes, INDIA: Bombay (lost). [Synonymized by Uvarov, 1922 : 237.]

Hieroglyphus banian var. *elongata* Uvarov, 1922 : 238. Holotype ♂, BANGLADESH: Faridpur (BMNH) [examined]. **Syn. n.**

♂. Medium size. Integument finely rugose and pitted. Fastigium of vertex as broad as long, with an elongate depression in middle; occipital carinula weak; frontal ridge with moderately deep sulcus and clearly developed lateral carinulae converging at upper end. Pronzona of pronotum longer than metazona; median carina weak but present along whole length of dorsum; crossed by three sulci; first sulcus present only laterally, second only centrally, third and posterior sulci entire, second and third slightly wavy; posterior margin of metazona obtuse-angular. Prosternal process conical. Mesosternal interspace open, about twice as long as wide in middle; metasternal interspace closed. Tegmina and wings reaching end of abdomen. Tympanal organ with subtympanal ridge, small dorsal shell covering, membrane moderately depressed. Hind femur moderately slender, reaching end of abdomen. Hind tibia only slightly shorter than hind femur. Supra-anal plate longer than wide in apical part with two ridge-like elevations, median sulcus disappearing at centre but present in basal part. Cercus slender, bifurcate with upper branch incurved, and recurved. Subgenital plate in profile elongate, upcurved above rest of abdomen, narrow at apex, subacute.

Phallic complex. Apical valves of penis shorter than valves of cingulum, narrowing at rounded apices; valves of cingulum tapering at apices; basal valves of penis moderately robust with sides extending at apices, dorsal ridge of valves smooth; gonopore process large, elongate, narrowing at apex; zygoma of cingulum wide and moderately broad, rami broad; apodemes almost reaching ends of basal valves of penis, horse-shoe-shaped, narrowing towards obtuse apices. Epiphallus bridge-shaped, with central protrusion at base; ancorae with acute apices; lophi large with two inner lobes, and sinuate outer edges.

General coloration green or yellowish brown, with yellowish brown patches; antennae brown with yellow stripes; all sulci on pronotum black; wing hyaline, veins dark and pale brown; hind femur greenish buff, hind knee with black patches on both sides; base of tibia black above, tibia bluish grey, tips of spines black, tips of bifurcate cercus black.

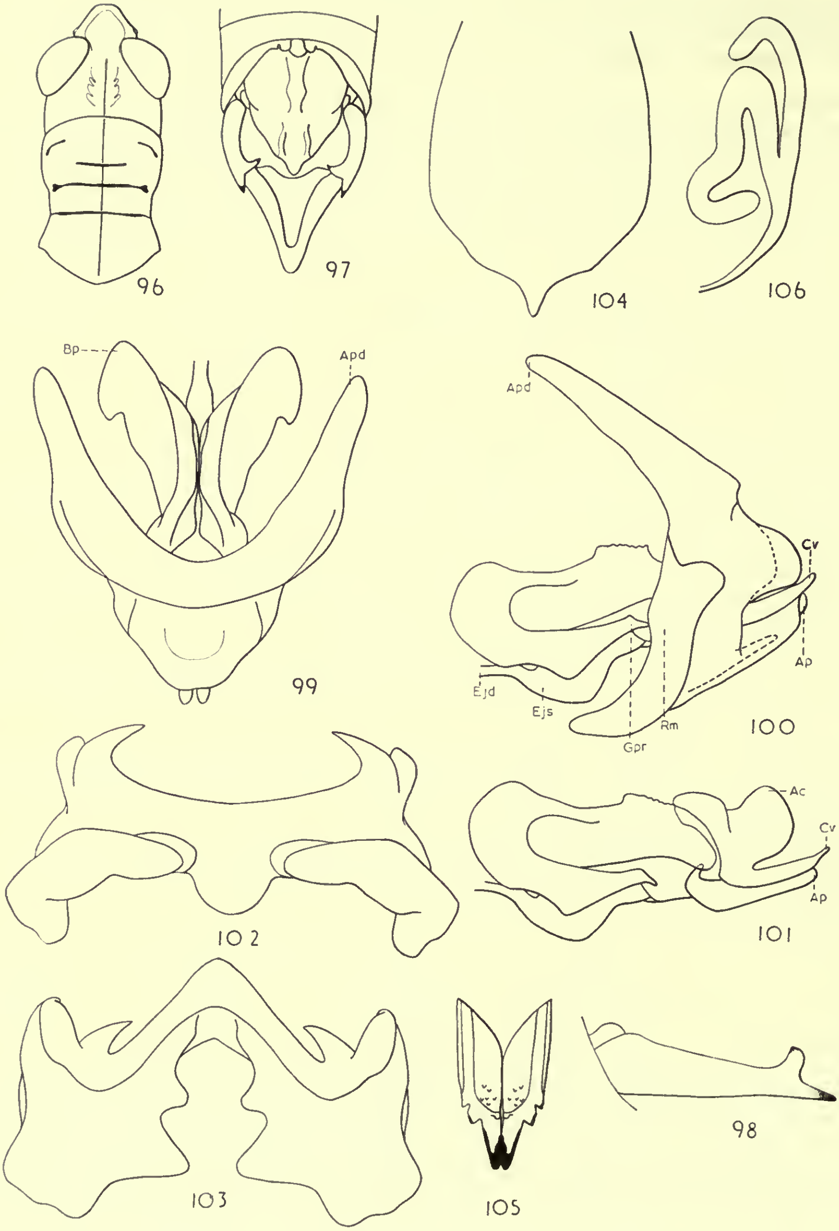
♀. As the male, but larger. Differs in fastigium of vertex being broader than long; subgenital plate simple, with one pointed median lobe; lower valves of ovipositor narrow, elongate, with two well defined teeth on each side.

Spermatheca large, apical diverticulum moderately narrow, elongate, curving back basally and apically; preapical diverticulum also elongate, shorter than apical diverticulum, curving back at apical end.

Measurements (mm).

	Length of body	Length of pronotum	Length of tegmen	Length of hind femur
Male	31·3–38·9	6·0–7·5	22·6–32·2	16·7–20·5
Female	41·6–53·6	7·8–10·3	27·1–43·9	21·4–28·2

I have compared the original type-material of Fabricius with the description and diagnosis of *Acridium furcifer* and the holotype of *Hieroglyphus banian* var. *elongata*. All are conspecific. As Uvarov (1922) stated, *H. banian* var. *elongata* is only an extreme morphological variation which may be caused by ecological conditions, or genetic factors. There is considerable variation in the size of the body, the degree of slope of the face, and the width of the fastigium of the vertex anteriorly; the mesosternal interspace may be open or nearly closed. The tegmina and wings sometimes extend beyond the end of the abdomen and sometimes do not quite reach the end. Transitions were found in all the material studied. The general shape of the male bifurcate cercus and the phallic complex are constant.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101
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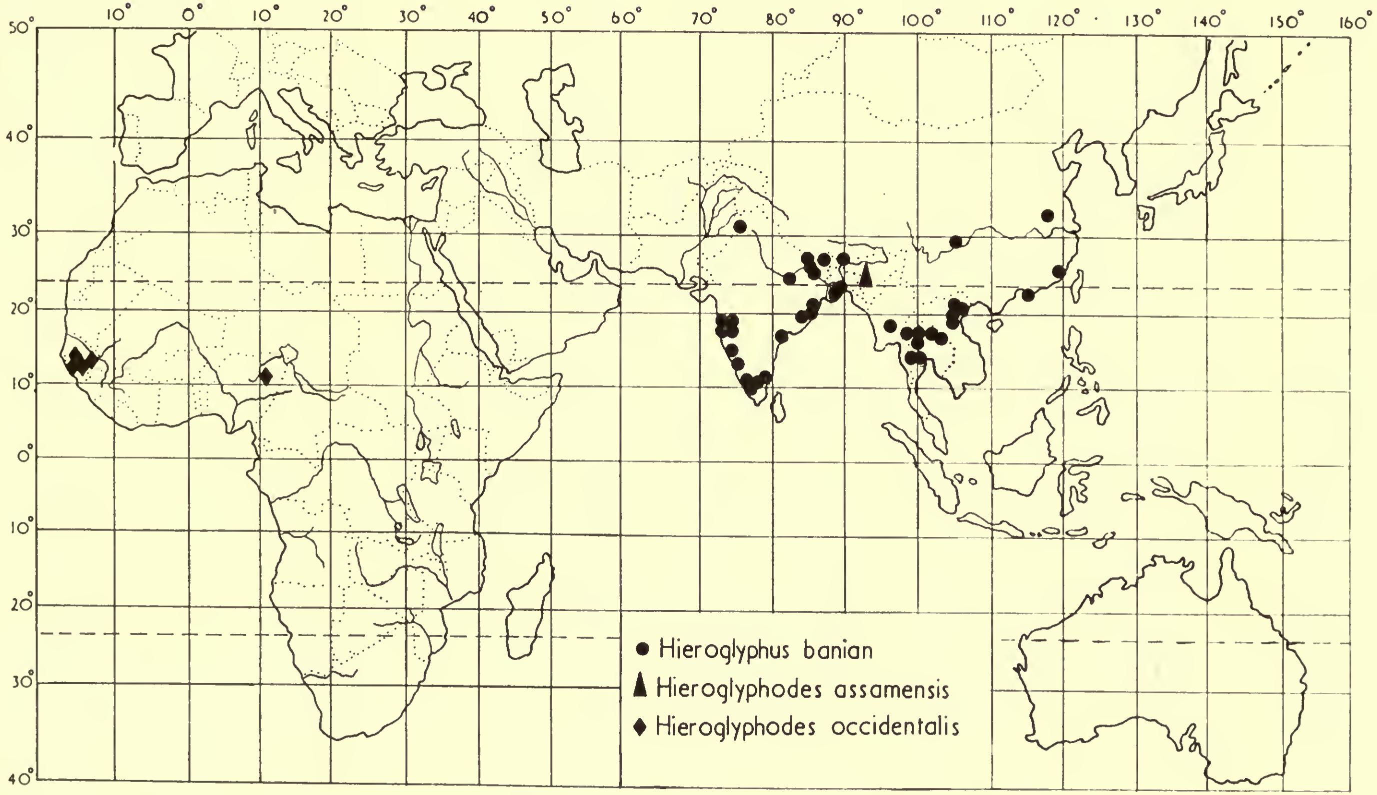
Figs 96–106. *Hieroglyphus banian* (F.). Male, 96, head and pronotum, from above; 97, end of abdomen, from above; 98, cercus, lateral view; 99, phallic complex, from above, with epiphallus and ectophallic membrane removed; 100, same, lateral view; 101, endophallus, lateral view; 102, epiphallus; 103, epiphallus, from different angle. Female, 104, subgenital plate, ventral view; 105, lower valves of ovipositor, ventral view; 106, spermatheca.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● Hieroglyphus banian
▲ Hieroglyphodes assamensis
◆ Hieroglyphodes occidentalis

Map. 4. Distribution of *Hieroglyphus banian*, *Hieroglyphodes assamensis* and *Hieroglyphodes occidentalis*.

From Fabricius' type-material of one male and two females that I have examined, a male lectotype has been designated, the others being paralectotypes. This type-material has one female from the Kiel collection labelled 'Ind or Daldorf Messrs S C T L' in Fabricius' writing.

MATERIAL EXAMINED

INDIA: 3 ♂, 2 ♀; Bombay, 1 ♂, 2 ♀; Belgaum, 12.xi.1905, 1 ♂; Khanapur, Belgaum-Dharwan Road, Malprabha River, 21.xi.1928, 1 ♂; Bengal, 18.xi.1906, 1 ♂; Cuttack, 23.xi.1905, 1 ♂; Ganjam District, Surada, 6 ♂, 4 ♀ (*G. Gabault*), 2 ♀; Maharastra, Belapur Road, 29.v.1935, 1 ♀; Ahmadnagar Dt, Belapur, 10. vii.1938 (*Y. R. Rasen*), 2 ♂, 4 ♀ (*T. N. J. Laveni*), 1 ♂; Godaven, Samalkot, 20.ix.1907, 1 ♂; Khurda, 11.xi.1913, 1 ♀, paratype of *H. banian* var. *elongata* Uvarov; United Provinces, Shahganj, 4.xi.1904, 1 ♂, paratype of *H. banian* var. *elongata* Uvarov; Madras, Coimbatore, x. 1920 (*A. P. Nathan*), 3 ♂, 4 ♀; viii. 1921 (*A. P. Nathan*), 1 ♀; 6.xii.1910 (*E. Ballard*), 1 ♀; 16.xi.1914, 1 ♀, 15.x.1914, 1 ♂; Sikkim, 3 ♂; Bihar, Gaya, 22.viii.1944 (*J. W. H. Rehn*), 1 ♂; Pusa, 2.viii.1920 (*S. C. Sarkar*), 1 ♂, x. 1907, 1 ♀, vi. 1908, 1 ♂, 1 ♀, 30.viii.1916, 1 ♀, 1911, 2 ♀, 1910, 1 ♀; Mysore State, Bhadravati, 1908, 9.x.1938 (*P. S. Nathan*), 1 ♀; Poona Furm, 28.xi.1906, 1 ♂; Hoshiarpur, viii. 1936 (*U. Bahadur*), 1 ♂, 1 ♀; Trinchinopoly, 1 ♂, 1 ♀; Tranquebar, 1 ♂, 1 ♀; Monts de Kodican, 1 ♂, 1 ♀; Nedungadu, 21.x.1931 (*R. S. Nathan*), 4 ♂, 6 ♀, 3.ix.1936 (*P. S. Nathan*), 2 ♀. NEPAL: 2 ♀. AFGHANISTAN: 1952–1953 (*G. S. Cotterell*), 1 ♀. BANGLADESH: Brahmaputra River, Goalundo-Gauhati, vii. 1919 (*Fletcher*), 1 ♀; Faridore, 30.viii.1909, 2 ♀. BURMA: 5 ♂, 1 ♀. VIETNAM (NORTH): Reg. de Thanh Hoa, vi. viii (*H. Fruhstorfer*), 2 ♀, 1 ♂; Hoa-Binh, 1929 (*A. de Cooman*), 1 ♀, 1927 (*A. de Cooman*), 1 ♂; Hanoi, 1911 (*Adj. Monceau*), 1 ♀, 1911 (*C. Dupouy*), 1 ♂; Tuyen-Quang, 1914 (*L. Chopard*) 2 ♂. BHUTAN: 1900 (*R. Oberthur*), 4 ♂, 2 ♀. CHINA: Cochin, Bavi, v. 1935 (*S. Masseyeff*), 1 ♀; Szechwan, Bebe Bez, Ching Kong, 1929–31 (*Friedrich*), 1 ♀; Foochow, F. W. 1 ♀; Soochow, Kaing-Su 4.viii.1918 (*E. Suenson*), 1 ♂. KAIPONG I.: 2.ix.1963, 2 ♀. THAILAND: Bangken, 16.ix.1964 (*J. Roffey*), 1 ♀, Sukhothai, 10,vii.1961 (*P. Kaen Tasee*), 3 ♂, 8 ♀; Kanchanaburi, 20.vii.1966 (*P. Nawikbut*), 5 ♂; Sakon Nakhon, 3.viii.1956 (*C. Butarobul*), 3 ♀; Nong Khai, 29.viii. 1964 (*P. Phelboon*), 1 ♂; Uttaradit, 28.ix.1961 (*J. Oonjai*), 2 ♀; Swan Province, Nakorn, vii. 1968 (*MacCuaig*), 12 ♂, 6 ♀, 1 nymph.

BIONOMICS. In Mysore State, India, the eggs are laid from October to December (Coleman & Kannan, 1911) and remain in the ground in the dry season until June or July. There is one generation a year. The laying is mainly in the grassy bunds round the paddy fields. In captivity about four egg-pods were laid per female and the number of eggs per pod was 29–49. In Assam each female lays 50–60 eggs altogether (Chowdhury & Majid, 1954). Butani (1961) and Janjua (1957) state that each pod contains 30–40 eggs, whilst Grist & Lever (1969) give the number per pod as 35. Gupta & Saxena (1963) give the number of eggs per pod in Uttar Pradesh as 68–90, the average being 81. Hatching takes place shortly after the first heavy rain, about the middle of June in India, and continues for about six weeks. It is completed in 30–40 days (Coleman & Kannan, 1911). For males the total development period from hatching in captivity was 75–98 days, and for females 87–105 days. Janjua (1957) states that eggs are laid two inches below ground surface during September to October in Pakistan. In West Bengal (Banerjee, 1957) and in Mysore (Coleman & Kannan, 1911), they are laid from October to December.

In Thailand hatching occurs between March and June (Roffey, unpublished MS) and oviposition in August and September.

CHROMOSOMES. There are 23 acrocentric chromosomes (Dutt, 1955). There are two pairs of short chromosomes, and only one pair of long ones. Differential spiralization of chromosomes is found in some isolated nuclei at metaphase.

ECOLOGY. The following information is mainly from Roffey (unpublished MS). In Thailand, this is a common species on elevated areas lying between rice-growing plains or in surrounding forests. It is found abundantly on the grass *Imperata cylindrica* which becomes established when the original forest is felled for maize cultivation.

Imperata grass determines the distribution and abundance of *H. banian*, some stands being several hectares in extent. The egg pods are laid in grass stands which are undisturbed when nearby land is ploughed for cultivation; they are also laid in the land that is to be cultivated, but the ploughing destroys them. This species is abundant also in dense grassy vegetation surrounding sugar plantations, where the soil is undisturbed, but it does not occur in the irrigated rice-growing areas as they are flooded when the adults lay eggs. Coleman & Kannan (1911) report from Mysore, India, that *H. banian* lays eggs almost invariably in the bunds surrounding the rice fields, and Janjua (1957) states that in Pakistan the young hoppers first feed on grasses on the bunds of the paddy fields. Gupta & Saxena (1963) state that in Uttar Pradesh, India, the hoppers fed first on *Cynodon dactylon* (doob grass) and later entered the sugar cane fields. A list of food plants is given below. Some of these records are from the literature and some from labels on specimens.

Bambusa spp.
Brachiaria sp.
Citrus sp.
Cocus nucifera
Cynodon dactylon
Dendrocalamus strictus
Echinochloa sp.
Eupatorium odoratum
Glycine max
Gossypium herbaceum
Imperata cylindrica
Justicia betonica
Musa sp.
Oryza sativa
Panicum miliaceum
Pennisetum typhoideum
Phaseolus aconitofolius
P. mungo
Ricinus communis
Saccharum officinarum
S. spontaneum
Sesamum indicum
Setaria sp.
Sorghum vulgare
Vetiveria zizanioides
Zea mays

ECONOMIC IMPORTANCE. *H. banian* is a major pest of rice, though there is little information on the exact amount of damage done. The earliest reported damage to crops, according to Rao & Cherian (1940), was in Raipur and Central Provinces in 1886. In S. India the earliest record is 1890 from the Ganjan district. Bhatia & Mathur (1964) record that in 1960 4,085 acres of rice were attacked in Andhra Pradesh, and in 1961 1,300 acres of rice were affected in Madhya Pradesh and 1,000 acres of jowar in Mysore.

Alam (1961) states that it is an important pest of rice in Bangledesh. Chowdhury & Majid (1954) report damage to rice in Assam, where the leaves and the soft grains are eaten. Coleman & Kannan (1911) record that the leaves of rice are eaten and the stalks cut through so that the ears fall. Estimates of crop-loss due to this insect on rice have varied from 25 to 95% in different parts of India (Anon. 1951*a,b*; Sengupta & Benhura, 1957). Further information on *H. banian* as a pest of rice is to be found in *Pans Manual* no. 3 (PANS, 1970). Other crops that suffer appreciable damage include sugar-cane and maize (see e.g. Roffey, 1964, 1965). Further information is given by Ramachandran (1952), Gupta & Joshi (1956), Main (1912), Janjua (1957), Roonwal & Balwant Singh (1958), Fletcher (1920), and Butani (1961).

PREDATORS AND PARASITES

Fungi:
Empusa (*Entomophthora*) *grylli* (Rao & Cherian, 1940)

Nematodes:
Probably *Gordius* sp. (Coleman & Kannan, 1911)
Mermis nigrescens Duj. (Rao & Cherian, 1940)

Mites:
Reddish mites found by Coleman & Kannan and Rao & Cherian.

Insects:
Mylabris sp. or a closely related genus (Coleman & Kannan, 1911)
Scelio hieroglyphi (Basaranra, 1953)

Frogs (Coleman & Kannan, 1911):
Rana leptodactyla Boulanger
Rana sp.

Lizards (Coleman & Kannan, 1911):
Mabuia beddomi Boulanger
Sitan ponticeriana Curv.

Snake:
Tropidonotus piscator (Coleman & Kannan, 1911)

Birds (Rao & Cherian, 1940):
Coracias indica (Indian Roller)
Haliastur indus Budd. (Brahmini Kite)

Milvus gavinda Sykes (Pariah Kite)
Corvus splendens Vieill (Crow)
C. macrorhynchus Waglar (Crow)
Dicrirus macrocerus Vieill (King Crow)
Acridotheres tristis (Mynah)

Mammals (Rao & Cherian, 1940):

Excreta, probably from jackals, was composed mainly of adult *Hieroglyphus* (mainly *H. oryzivorus*, but probably including *H. banian*).

PARAHIEROGLYPHUS Carl, 1916

Hierocerys I. Bolívar, 1912 : 59. Type-species, by PRESENT DESIGNATION, *Hierocerys bilineatus* I. Bolívar, 1912. [Homonym of *Hieroceryx* Tosquinet, 1896 (Hymenoptera).]

Parahieroglyphus Carl, 1916 : 482. Type-species, by monotypy, *Parahieroglyphus bilineatus* Carl, 1916 [= *Parahieroglyphus bilineatus* (Bolívar)].

Hierocericina I. Bolívar, 1923 : 76. [Replacement name for *Hieroceryx* I. Bolívar.]

Medium size. Moderately slender. Integument finely pitted; hairs present on sternites and on hind tibia. (Antennae broken.) Fastigium of vertex with depression in front of transverse furrow, at least twice as broad as long, apex obtuse-angular. Weak carinula of vertex present. Frontal ridge with shallow sulcus and parallel edges. Frons in profile inclined backwards, straight or convex. Dorsum of pronotum flattened; median carina weak linear, crossed by three narrow, shallow sulci; lateral carinae absent; metazona half as long as prozona, its posterior margin obtuse-angular. Prosternal process conical. Tegmina and wings shortened, when folded their apices reaching third abdominal segment. Radial area of tegmen with several regular thickened, transverse, stridulatory veinlets, well developed. Tubercles present in the precostal, costal and sub-costal area (the purpose of these tubercles is unknown). Hind femur moderately slender. External apical spine of hind tibia present. Arolium moderately large. Supra-anal plate acute-angular, slightly broader than long, apex subacute. Subgenital plate small, obtusely conical, as long as broad. Male cercus very large, apex divided into three lobes; upper and middle lobes much larger than lower.

Phallic complex. Apical and basal valves of penis divided. Valves of cingulum larger than apical valves of penis, expanding in front of small narrow curved apex. Ectophallic membrane forming ventral sclerotization. Epiphallus divided, thick, robust, broader in apical part than in basal part, with moderately large ancorae, lophi curved inwards and upwards.

Ovipositor moderately robust, apices of lower valves obtuse. Subgenital plate trilobate. Spermatheca with long apical and shorter preapical diverticulum (only *P. bilineatus* female abdomen was seen by the author).

Parahieroglyphus differs from *Hieroglyphus* and *Hieroglyphodes* in that the eyes are less prominent: the pronotum is more flattened dorsally and less cylindrical: and the transverse sulci of the pronotum are narrower and weaker. The male cerci are very large, stout, thick and divided into three lobes. The male supra-anal plate is small and triangular, with three or five shallow callosities.

KEY TO THE SPECIES

1 (2) Frons in profile straight (Text-fig. 108). Male cerci with upper lobe as long as middle lobe (Text-fig. 110). Epiphallus broader apically (Text-fig. 115) **bilineatus** (Bolívar) (p. 548)

– Frons in profile convex (Text-fig. 119). Male cerci with upper lobe much shorter than middle lobe (Text-fig. 121). Epiphallus much broader apically (Text-fig. 125) . . . . **colemani** (Bolívar) (p. 550).

DESCRIPTIONS OF THE SPECIES

Parahieroglyphus bilineatus (I. Bolívar, 1912)

(Text-figs 3, 107–118, Map 3)

Hieroceryx bilineatus I. Bolívar, 1912 : 60. LECTOTYPE ♂, INDIA (IEE, Madrid), here designated from 1 ♂, 1 ♀ syntypes [examined].

Hieroglyphus bilineatus Kirby, 1914 : 202. Syntypes of both sexes, 'BENGAL' (lost). [Synonymized by Uvarov, 1922 : 227.]

Parahieroglyphus bilineatus Carl, 1916 : 483. LECTOTYPE ♂, INDIA (MHN, Geneva), here designated from 13 ♂, 12 ♀ syntypes [examined]. [Synonymized by Uvarov, 1922: 227.]

♂. Medium size. Integument finely pitted. Frons in profile straight, inclined backwards. Cerci very large, divided into three lobes, upper lobe subacute, same length as middle lobe which is greatly expanded at apex, lower lobe small, narrow-elongate, curved upwards.

Phallic complex. Comparatively broad. Apical valves of penis broader than valves of cingulum, apices obtuse, valves of cingulum slightly expanded at apical part, with incurved apices; basal valves of penis robust, expanding at ends; dorsal ridge of valves smooth; gonopore process expanding at base, narrowing at apex; zygoma of cingulum narrow; rami broad; apodemes diverging forming U-shaped structure, approximately same length as basal valves of penis, gradually narrowing to obtuse apices. Epiphallus robust, slightly broader in apical part than in basal part, lophi thick, robust, moderately short and upcurved, facing towards centre of bridge; ancorae thick, of moderate length.

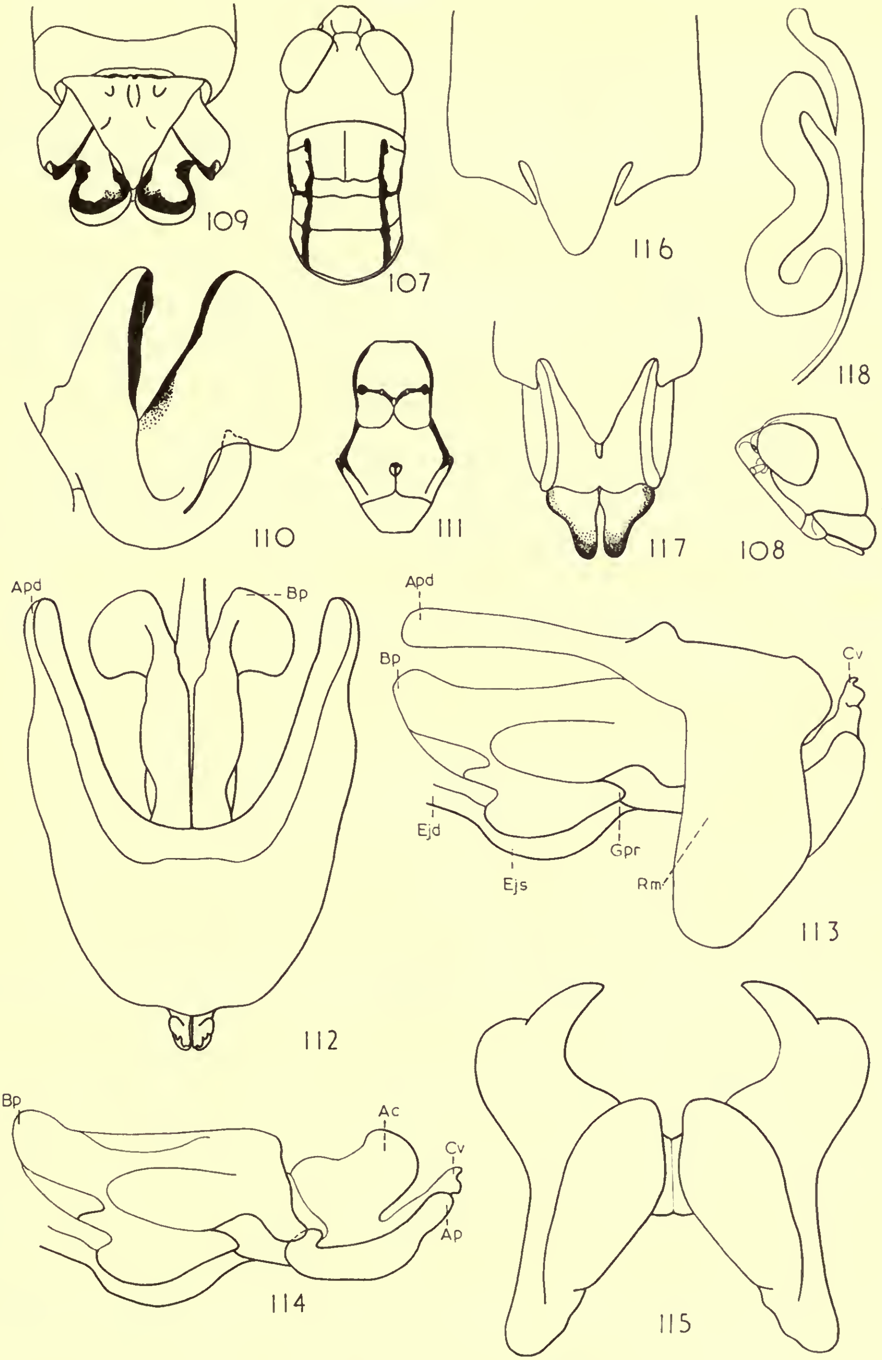
General coloration buff, with dark brown or black markings. Pronotum with two narrow black longitudinal stripes in prozona and metazona; third sulcus black on sides, with band forming an L-shape pointing towards head. Tegmina with longitudinal black stripe continuing from pronotum along post-cubital vein. Edge of last abdominal tergite black at centre. Knee with black patches on both sides. Hind tibia bluish grey, base black; tips of spines black. Edges of upper and middle lobe of cercus black.

♀. Larger than male. Fastigium of vertex three times as broad as long. Subgenital plate trilobate with lateral lobes shorter and narrower than central lobe.

Measurements (mm).

	Length of body	Length of pronotum	Length of tegmen	Length of hind femur
Male	19·1–25·2	5·1–5·4	8·5–8·7	11·5–12·5
Female	33·6–38·3	7·2–8·5	8·8–11·1	17·7–19·2

This species was given the name *Hieroglyphus bilineatus* (see Kirby, 1914, p. 202) by Saussure in a manuscript and specimens were sent to different museums with the result that it was described three times, by Bolívar, Kirby and Carl, under different generic names but the same specific name. From the structure of the internal genitalia and other external generic characters it is obvious that it does not belong to the genus *Hieroglyphus*. It is therefore retained in the genus *Parahieroglyphus* Carl. A good series of syntypes from the Muséum d'Histoire Naturelle, Geneva, has enabled me to give the variation of characters within the species. The length of the tegmina of the males varies considerably; sometimes they even extend to the last abdominal tergite. The frontal ridge sometimes diverges just below the ocellus. The length of the upper lobe of the male cercus may be slightly shorter than the middle lobe. The mesosternal interspace of the females is sometimes slightly open.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FIGS 107–118. *Parahieroglyphus bilineatus* (I. Bolívar). Male, 107, head and pronotum, from above, 108, head, lateral view; 109, end of abdomen, from above; 110, cercus, lateral view; 111, meso- and metasternum; 112, phallic complex, from above, with epiphallus and ectophallic membrane removed; 113, same, lateral view; 114, endophallus, lateral view, 115, epiphallus. Female, 116, subgenital plate, ventral view; 117, lower valves of ovipositor, ventral view; 118, spermatheca.

MATERIAL EXAMINED

INDIA: Bombay, Ghat Kopar, 17.vii.1910 (*S. H. Prater*); Chikalda, Berars, 3664′ (*N. B. Kinnear*), 1 ♀; Simla Hills 5–7000′, 1926 (*A. Jones*) 1 ♀; 'Indies Orient' (*Saussure*), 10 ♂, 8 ♀, 1 nymph (paralectotypes of *P. bilineatus* Carl, 1916); (*Saussure*) 2 ♂, 1 ♀; 'Himalaya' (*Hy. de Saussure*) 3 ♀, (paralectotypes of *P. bilineatus* Carl, 1916).

BIONOMICS. According to Katiyar (1956) eggs are laid in Dehra Dun, India in September and October. Each female lays 3–5 egg-pods, averaging 31 eggs per pod. Hatching occurs from the end of May to the beginning of July. There are six moults in both sexes, but the males become adult 10–16 days earlier than the females.

ECOLOGY. The egg-pods are inserted at a depth of 2·5–6·4 cm in sandy loam along the sides of trodden paths in the bamboo area, close to the margins of the paddy fields, and along cart tracks in the Bibiwala forest. This species is common near high grasslands in the forest around Dehra Dun. It feeds on grasses including rice, and maize.

PREDATORS. *P. bilineatus* is attacked by the birds *Eudynamis scolopaceus* L. and *Coracias benghalensis* L.

Parahieroglyphus colemani (I. Bolívar, 1912)

(Text-figs 119–125, Map 3)

Hierocerryx colemani Bolívar, 1912 : 61. Holotype ♀. INDIA; Mysore, Anavatti (IEE, Madrid) [examined].

♂. Medium size. Integument finely pitted. Frons in profile, inclined backwards. Cerci divided into three lobes with the upper lobe truncate at apex, much shorter than middle lobe, middle lobe narrow at base, expanded at rounded apex, lower lobe small, narrow, elongate-round at apex. Femur absent.

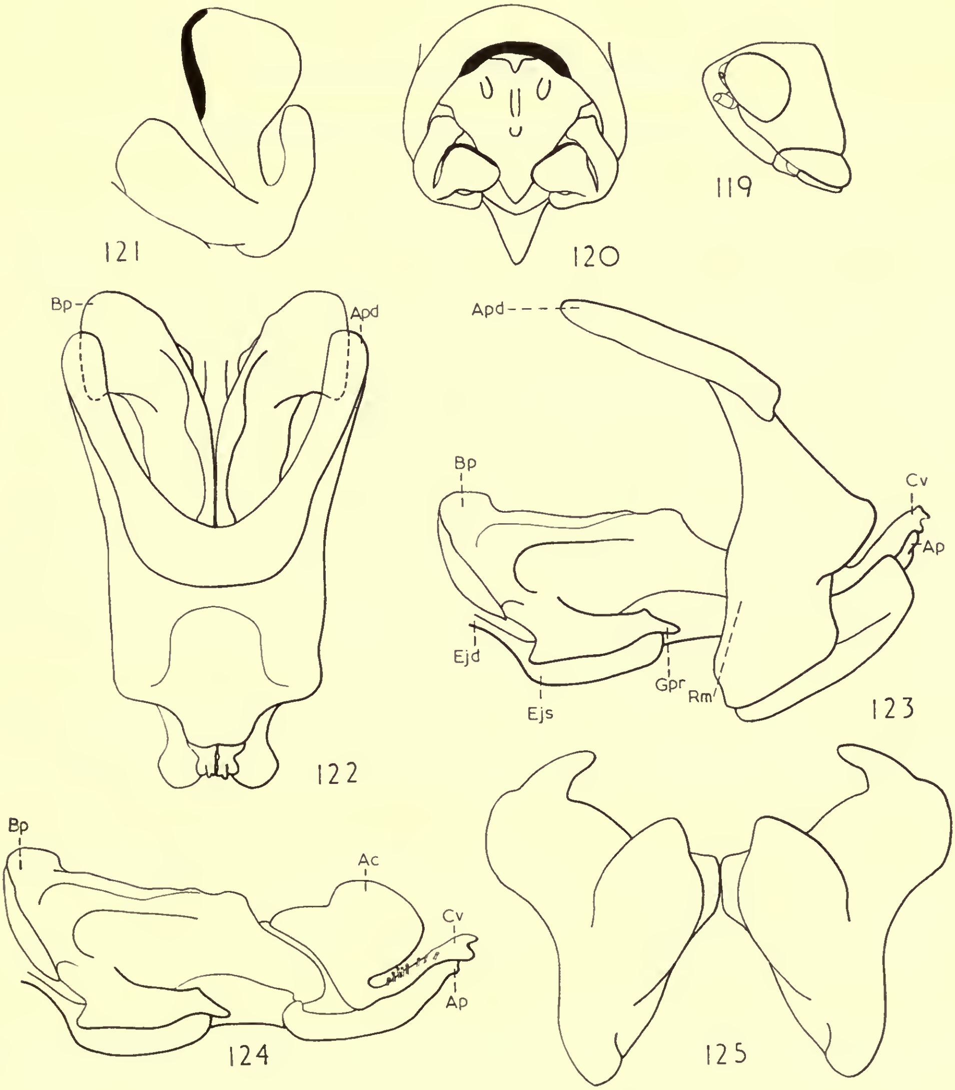
Phallic complex. Comparatively narrow. Apical valves of penis approximately the same width as valves of cingulum, with obtuse apices; valves of cingulum slightly longer than apical valves of penis, expanded at apices which are incised; basal valves of penis robust, expanded at ends; dorsal ridge of valves relatively smooth; gonopore process expanded at base, narrowing towards apex; zygoma of cingulum moderately broad; rami broad with upcurved projection covering part of apical valves of penis, projection of rami dorsally expanded; apodemes diverging, relatively narrow, slightly shorter than basal valves of penis. Epiphallus much broader than basal part.

General coloration buff (in dry specimens). Pronotum with pair of narrow black longitudinal stripes in prozona and metazona. Tegmen with black longitudinal stripe from pronotum along post-cubital vein. Edge of last abdominal tergite brownish black at centre. Callosities on supra-anal plate reddish brown. (Femur and tibia absent.) Edge of upper and particularly middle lobe of cerci black.

♀ damaged.

Measurements of male. Length of body 21·4 mm; tegmen 7·6 mm. The pronotum was damaged and the hind femora are missing.

This species was described originally from a single female, of which now only the head and pronotum remain. Only one male was studied; this specimen, which is described above, is the one that Uvarov (1922) mentioned. I too am assuming that this specimen is *P. colemani* because it agrees with the characters mentioned by Bolívar. The structure of the internal genitalia and certain external characters



Figs 119–125. *Parahieroglyphus colemani* (I. Bolívar). Male, 119, head, lateral view; 120, end of abdomen, from above; 121, cercus, lateral view; 122, phallic complex, from above, with epiphallus and ectophallic membrane removed; 123, same, lateral view; 124, endophallus, lateral view; 125, epiphallus.

confirm that this specimen is not *P. bilineatus*. No undamaged female is available for examination, and until other specimens of both sexes are available the correct naming of this species remains in doubt.

MATERIAL EXAMINED

INDIA: Surat, Bombay, x. 1903, 1 ♂.

HIEROGLYPHODES Uvarov, 1922

Hieroglyphodes Uvarov, 1922 : 228. Type-species, by original designation, *Hieroglyphodes assamensis* Uvarov, 1922.

Medium size. Moderately slender. Integument finely pitted. Hairs present on ventral surface of abdomen and on hind tibia. Antenna longer than head and pronotum together. Eyes large, prominent. Fastigium of vertex with depression one-and-a-half to two times as broad as long in front of bow-shaped transverse furrow; apex obtuse-angular. Weak occipital carinula present. Frontal ridge sulcate throughout, with margins divergent downwards. Frontal ridge forming an acute angle, rounded at apex, with fastigium of vertex. Pronotum cylindrical or slightly narrowing in metazona; median carina weak, linear, crossed by three wavy, deep, broad sulci; metazona longer than half length of prozona, its posterior margin obtuse-angular. Prosternal process conical at apex, pointed. Mesosternal interspace narrowing at centre, open; metasternal interspace closed. Tegmina and wings just passing second abdominal tergite, apex narrow or very narrow, downcurved. Radial area of tegmen with several regular thickened, transverse, stridulatory veinlets, poorly developed. Tubercles present in the precostal, costal and subcostal area (the purpose of these tubercles is unknown). Tympanum well developed, average size, with small dorsal shell covering, no subtympanal lobe. External apical spine of hind tibia present. Arolium as large as or slightly larger than claw. Supra-anal plate broader than long, trilobate with small middle lobe, apex elongate, subacute central deep sulcus with two ridges interrupted at centre, median lateral convexities present. Subgenital plate moderately short, at apex truncate or obtuse. Cerci large, broad, upcurved with wide incurved apex, curving over supra-anal plate.

Phallic complex. Apical and basal valves of penis divided. Apical valves of penis narrower than valves of cingulum, narrowing at apices; valves of cingulum longer than valves of penis. Ectophallic membrane forming ventral sclerotization. Basal valves of penis moderately slender. Epiphallus divided, small, with long or relatively long ancorae and moderately small two-lobed lophi.

General coloration dirty brown, buff or greenish brown with dark brown and black patches, shiny. The four sulci on pronotum with broad black bands, the first, second and third bands interrupted at centre. Lateral lobes of pronotum with black band running horizontally from third sulcus towards first. Knee with black patches on both sides, base and apex of hind tibia black; tips of spines black.

♀. Larger than male. Subgenital plate trilobate, with lateral lobes slightly longer than middle lobe. Ovipositor moderately robust.

This genus was originally described by Uvarov in 1922 from one male and one female from Assam; this is the only material of the type-species available for study. A second species was described by Roy on the basis of a unique male specimen from West Africa. The male genitalia had not been studied previously in either species; investigation of them has shown marked differences between the species but has confirmed that they are congeneric.

KEY TO THE SPECIES

1 Head broader than pronotum. Pronotum narrower in metazona than prozona (Text-fig. 126). Cercus relatively narrow at base, expanding at apex, which is directed forwards (Text-fig. 128). . . . . ***assamensis*** Uvarov (p. 553)
– Head of same width as pronotum. Pronotum cylindrical, of same width in metazona and prozona (Text-fig. 136). Cercus relatively broad at base, expanding at apex which is directed backwards (Text-fig. 138) . . ***occidentalis*** Roy (p. 555)

DESCRIPTIONS OF THE SPECIES

Hieroglyphodes assamensis Uvarov, 1922

(Text-figs 126–135, Map 4)

Hieroglyphodes assamensis Uvarov, 1922 : 228. Holotype ♂, INDIA: Assam, Cachar (BMNH) [examined].

Holotype ♂. Medium size. Integument finely pitted. Head slightly broader than pronotum. Fastigium of vertex twice as broad as long. Weak occipital carinula present. Frontal ridge slightly widening downwards. Pronotum narrowing in metazona. Tegmen lancet-shaped, narrowing at apex. (Hind femur broken.) Arolium (in female) as large as claw. Supra-anal plate considerably broader than long. Cercus broad at base, upcurved, narrowing, but broadly expanding at apex, which is directed forwards, apex rounded. Subgenital plate with obtuse apex.

Phallic complex. Valves of cingulum moderately broad, with obtuse apices and a row of hair-like stubs; basal valves of penis moderately robust, dorsal ridge relatively smooth; gonopore process large, elongate, narrowing at apex; zygoma of cingulum with elongate central projection with obtuse rounded apex; rami broad with narrow extension at the base which upcurves; apodemes diverging forming a V-shape, slightly shorter than basal valves of penis, gradually narrowing to an obtuse apex. Epiphallus slightly broader in apical than basal part, lophi short, with rounded lobes facing towards middle, ancorae moderately long.

General coloration dirty brown (probably discoloured and more or less greenish in life) with yellowish brown and dark brown patches.

♀ (paratype). Differs from male in fastigium of vertex being three times as broad as long; mesosternal interspace wider than in male, half as broad as long; middle lobe of subgenital plate shorter than lateral lobes, apex of middle lobe with three small projections. Hind tibia yellowish brown.

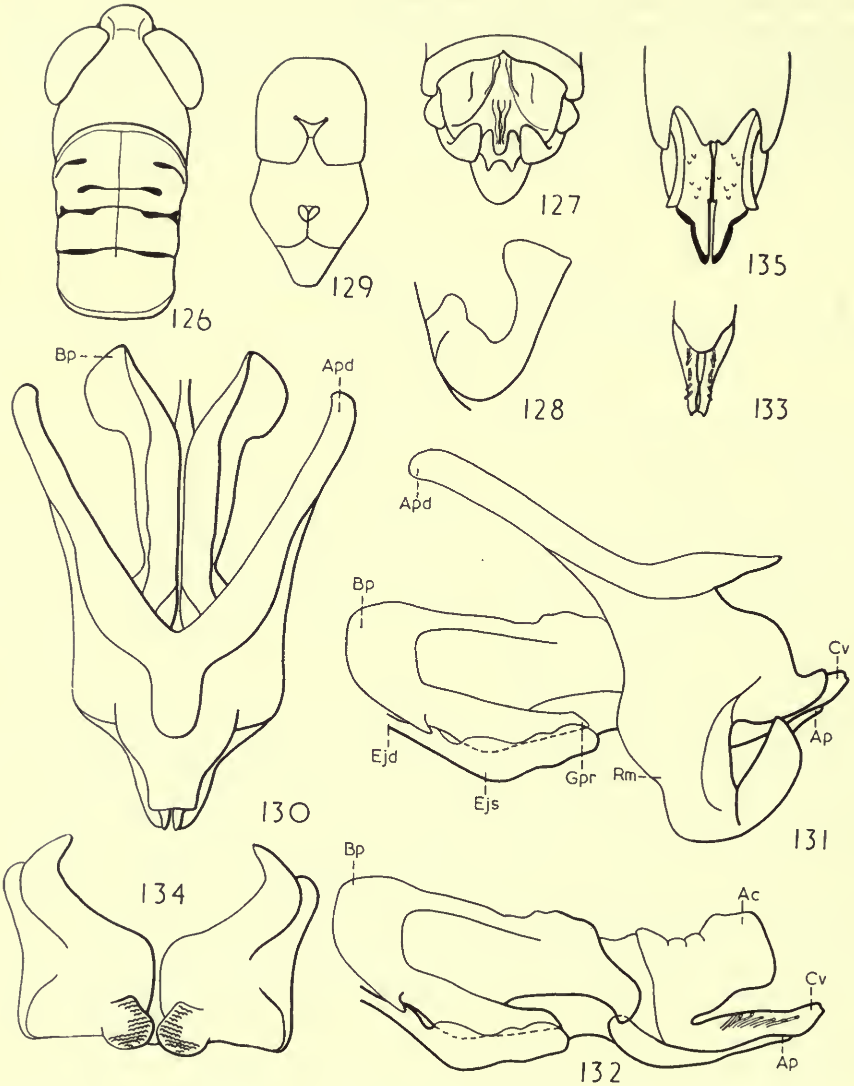
Measurements (mm).

	Length of body	Length of pronotum	Length of tegmen	Length of hind femur
Male	28·0	6·2	8·5	(absent)
Female	40·5	8·3	10·9	18·7

Only two specimens of this species are known, the male holotype and the female paratype. It differs from *H. occidentalis* in the characters given in the key.

MATERIAL EXAMINED

Known only from the male holotype and a female paratype with the same data.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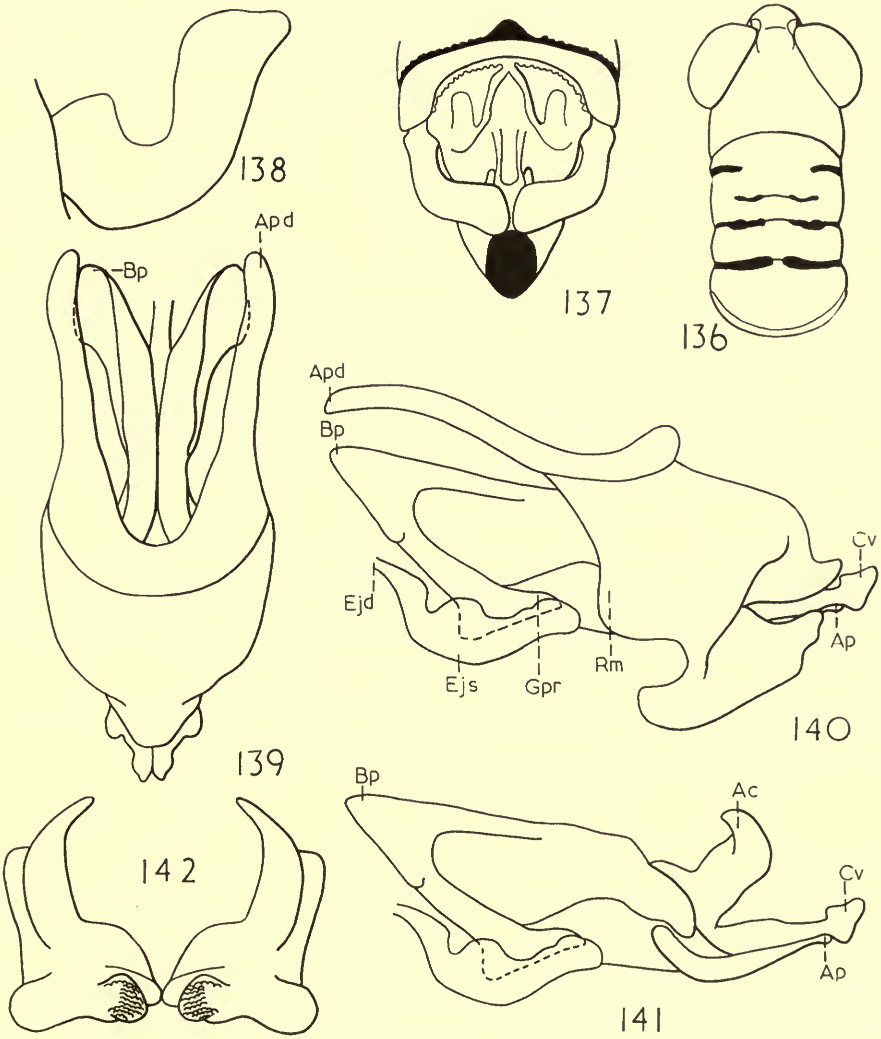
FIGS 126–135. *Hieroglyphodes assamensis* Uvarov. Male holotype, 126, head and pronotum, from above; 127, end of abdomen, from above; 128, cercus, lateral view; 129, meso- and metasternum; 130, phallic complex, from above, with epiphallus and ectophallic membrane removed; 131, same, lateral view; 132, endophallus, lateral view; 133, valves of cingulum, from above; 134, epiphallus. Female paratype, 135, subgenital plate and lower valves of ovipositor, ventral view.

Hieroglyphodes occidentalis Roy, 1961

(Text-figs 2, 136–142, Map 4)

Hieroglyphodes occidentalis Roy, 1961 : 123. Holotype ♂, SENEGAL: Niokolo-Koba, between Badi and Bafoulabé, savanna, 23.xi.1959 (MNHN, Paris) [examined].

♂. Small to medium size. Integument finely pitted. Head as wide as pronotum. Fastigium of vertex one-and-a-half times as broad as long. Frontal ridge twice as wide at base as at apical part. Pronotum cylindrical. Tegmen at apex very narrow. Arolium



FIGS 136–142. *Hieroglyphodes occidentalis* Roy. Male, 136, head and pronotum, from above; 137, end of abdomen, from above; 138, cercus, lateral view; 139, phallic complex, from above, with epiphallus and ectophallic membrane removed; 140, same, lateral view; 141, endophallus, lateral view; 142, epiphallus.

slightly larger than claw. Supra-anal plate slightly broader than long. Subgenital plate with truncate apex. Cercus very broad throughout, becoming broader at apical end, directed backwards, at apex obtuse.

Phallic complex. Valves of cingulum moderately broad, expanding just before apices, apices narrowly rounded; basal valves of penis moderately slender, dorsal ridge smooth; gonopore process narrow, expanding at apex; zygoma of cingulum with no central protrusion, rami very broad with upcurved extension; apodemes narrow, slightly longer than basal valves of penis, U-shaped, narrowing to rounded apex. Epiphallus slightly broader in apical than basal part; ancorae long; lophi short with rounded lobes facing inwards.

General coloration buff or yellowish green. Ninth abdominal tergite with black band on its posterior margin. Tip of subgenital plate black. Hind tibia bluish grey.

♀. As the male, but larger. Differs in the fastigium of vertex being two-and-a-half times as broad as long; lower valves of ovipositor elongate with subacute apices and two external lateral projections, the apical one rounded, the basal pointed.

Measurements (mm).

	Length of body	Length of pronotum	Length of tegmen	Length of hind femur
Male	23·0–25·0	5·2	7·0–7·6	13·2
Female	40·7	8·0	11·4	19·2

This species is similar to *H. assamensis* in the general shape of the upcurved male cercus, in the supra-anal plate being trilobate, with a small middle lobe, and in the divided epiphallus with the deeply sclerotized lobes of the lophi turning inwards, and in the elongate ancorae. It differs from it in the characters given in the key and in the phallic complex (Text-figs 139–142) (particularly the expanded apex of the valves of the cingulum, the absence of a protrusion on the zygoma and the very long ancorae of the epiphallus).

MATERIAL EXAMINED

SENEGAL: Ziguinchor, Rizieres, 28.viii–3.ix.1962 (*R. A. Farrow*), 2 ♂. GAMBIA: Tabi, Signona, 14.xi.1961, Basse-Casamanco, Lisiere Foret (*Mission IFAN*), 1 ♂. NIGERIA: Bajoga, 28.ix.1970 (*G. Popov*), 1 ♂, 1 ♀.

ECONOMIC IMPORTANCE. This species was found by Mr G. Popov causing considerable damage to cotton in Nigeria, Bajoga, 28.ix.1970.

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